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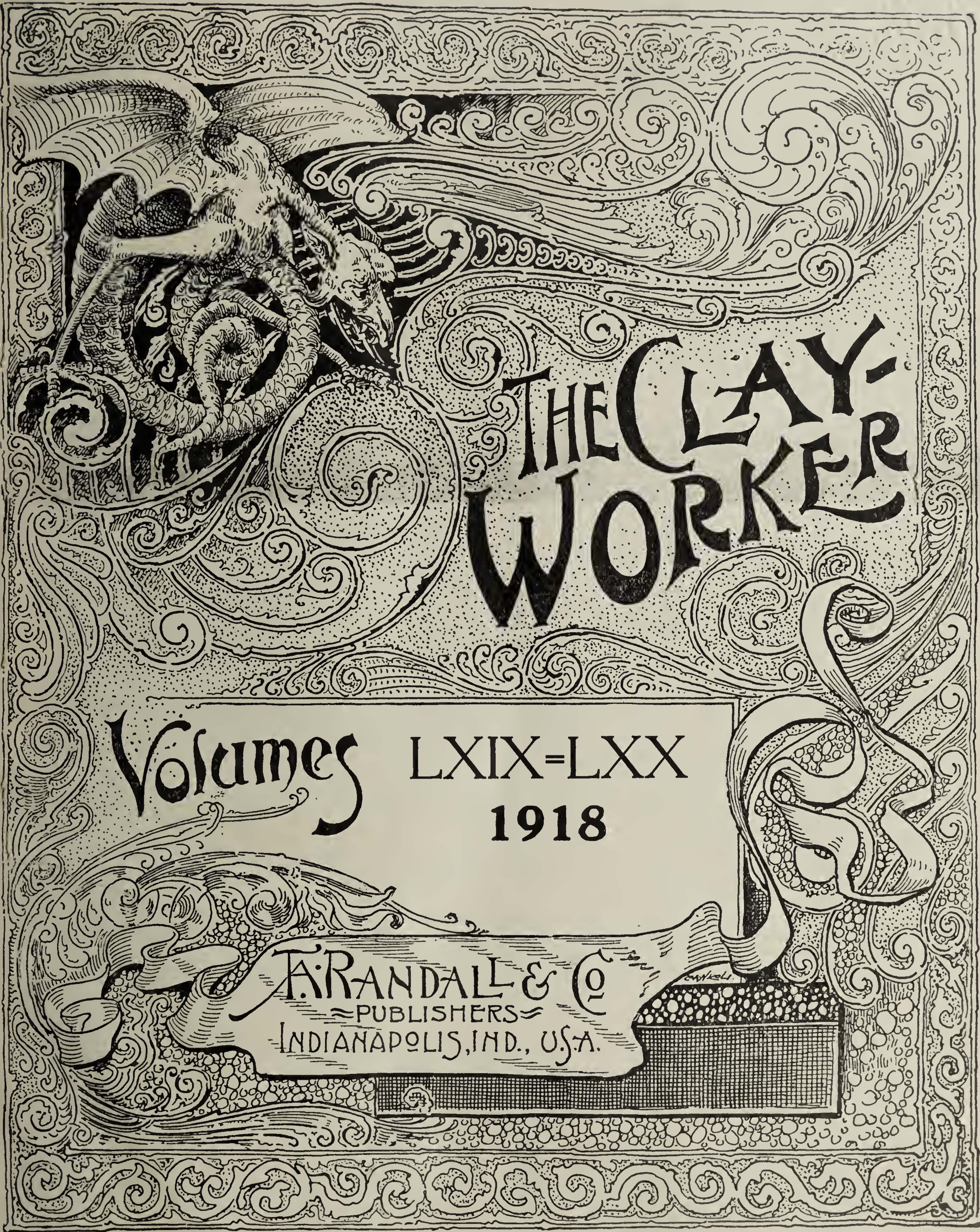

THE CLAY-WORKER

Volumes LXIX=LXX

1918

T. A. RANDALL & Co
PUBLISHERS
INDIANAPOLIS, IND., U.S.A.

INDEX TO THE CLAY-WORKER

VOLUME LXIX

FROM JANUARY TO JUNE, 1918

A

Advantages of Clay Storage and the Description of a Successful Installation, The 32, 142
Among the Live Wires of the Convention 130
Annual Meeting American Ceramic Society 138
American and English Income Taxes 487
An Old-Time Member Detained at Home 160
Art in Brick and Landscape Work 277
Approves Idea of Keeping N. B. M. A. an Educational Organization 281
Appreciation from A. C. S. Member 297
An Eventful Meeting 297
Annual Fire Loss, The 473
Application of Producer Gas to Periodic Muffle Kilns, The 548
Additional Data on the Kiln Question 560
As to Curtailment 575
Automatic Control and Measurement of High Temperatures, The 652
America First 753

B

Buttonhole Talks 30, 638
Burning Clay Wares 34, 153, 540, 640, 744
Brick News from Southern Indiana 31, 157, 300, 426, 545, 688, 752
Burning Brick with Pulverized Coal Fuel 50
Brickmaking as Is 159
Brick News from the Twin Cities 194
Best Convention Ever, The 180
Benefits of Social Co-operation in the Brick Business 258
Brickmaking the Hoosier Way 263
Brickmaking in Louisiana 274
Burning Brick with Producer Gas in Indiana 276
Building of Frame Houses Should Be Discouraged 286
Brickmakers' Accounts 289
Building Brick Bureau, The 291
Bids for 1919 Convention 292
Bright Future for Ceramic Organizations 297
Banquet Best He Ever Attended 298
Brick and Tile Values 350
Business Man's Bit, The 351
Better Roads for Southern Indiana 360
Building the Lincoln Highway Right 435
Building Outlook, The 472
Brick House Booklet, A 474
Business Good Among the Potteries in Ohio Valley 482
Building Industry, The 556
Brickyard Within 100 Miles of the Arctic Circle 560
Ball Engine Company's New England Representative, The 558
Building Brick Sizes 641
Business of Babbitting, The 649
Brick, the Building Material of the Ages 650
Business Good in the Stoneware Line 660
Brick Waste and Roofing 663
Brick Trade, The 663
Belated Convention Echo from Sweden, A 764
Building Question, The 766

C

Convention City, The 21
Ceramists of New England Organize 30
Canadian Clayworkers to Gather at Toronto 44
Current Comment 52, 180, 350, 472, 574, 662, 766
Convention Benefits 52
Convention Season, The 53
Better Homes Shows, The 37
Convention Personals 127
Canadian Kept at Home Sends Fee 160
Convention an Inspiration, The 160
Congratulations from One Who Has Attended Many Conventions 161
Clay Products in Brazil 181
Committee on Resolutions 257
Co-operation in Brick Business 258
Co-ordination of the Brick Business 260
Completing Brick Highway at Cost of $500,000 301
Considers the Convention the Best Yet 297
Convention Sessions Well Attended 298
Convention Profitable from Business Standpoint 299
Clay Machinery Men to Boost Next Convention 299
Convention Far Above the Standard 299
Cash Idea, The 351
Chronology of the Fuel Situation 434
Cost of Brick Roads 537
Clayworkers' Coal Pile, The 539
Chamber of Commerce Resolutions 561
Curtailment of Non-War Industries Ordered 576
Clayworking Family, The 575
Clay Products Exported 575
Chicago Annexes Indianapolis 659
Cincinnati Brick and Building News 72, 197, 357, 686, 757
Curtailing the Open Account 663
Canadian Convention Well Attended 147
Co-operative League of the Building Trades and Industries 352
Convention Echoes 297
Clay Mining Progress 739
Hollow Tile as a Factor in Fire Prevention 740
Colombia as a Trade Field 746
Carved Tapateta 750
Ceramic Conference Held in Pittsburgh 759
Chicago Ceramists Hold Meeting 763
Compliments Arkansas Brick Manufacturer 764
Co-operative Preparedness 761

D

Drain Tile Manufacturers Organize 181
Drain Tile Plant Wanted in Arkansas 661
Duty of the Hour, The 256
Depletion Charges 767

E

Editorial Notes and Clippings 59, 362, 479, 579, 683, 787
Economy in Labor and Fuel Both Essential 180
Election of Officers 250
Essentials in Kiln Construction 282
Every Brick and Tile Man Should Join N. B. M. A. 297
Enjoyed Convention Week 298
Economic Methods of Heating Clay Storage Sheds 544
Electric Trucking 639
English Clay Imports 767
Entertainment Features Much Enjoyed 299

F

Four Tottering Walls 52
Fuel Values of Various Coals, Oils and Producer Gases, The 150
Facts as to the Recent Conference with the U. S. Fuel Administration 300
Fuel and Labor Saving 262
Farmers' Billions, The 351
Fine Bit of Trade Literature, A 301
Feeding the Men in Training 543
Facts About Contracts 551
Fruits of Open Competition 558
Flag Raising at Home of New Jersey Clayworker 559
Fuel Problem, The 662
Freight Rates 767

G

Good Convention from Business Standpoint 160
Good Fellowship Prevailed 298
German Atrocities to Boost Loan 433
Great Duty, The 247
Germany and the Food Question 553
Growth of the Motor Truck 575
Girl Brickmakers in Great Britain 634
Good Suggestion from Arkansas Brick Manufacturer 660

H

Heard in New England 37
How to Report New Income Under War Revenue Act 155
Hoosier Convention the Best Ever, The 161
Hoosier Convention Successful 297
Home Builder, The 357
Huh-uh! Not Me! 425
How Clay Products Can Help Win the War 737
Help the War Work and the War Work Will Help You 747
How Clayworkers Can Help Win the War 756

I

Increasing the Demand for Clay Products 38
Illinois Short Course Well Attended 45
Incomes and Profits 53
Installation of Officers 252
Illinois Clay Manufacturers Association Celebrates Fortieth Anniversary, The 433
Information Wanted Relative to Clay Mining 439
Its Ships 473
Industry and the War 473

K

Kiln Floor, The 282
Kentucky Outlines Working Plans 558

L

Let Us Take Counsel 41
Life Insurance 41
Looking Forward 162
Local Committees Complimented 160
Let's Co-Ordinate 180
Locomotive Power 181
Lumber Dealers Start Something 161
Louisville Brick News 482, 558
Lincoln Highway Through Hoosierdom, The 574
Liberty Bonds 574
Labor Situation, The 576, 647
Labor Fights in Self-Defense 753
Latin-American Prospects in Clayworking Machinery 762

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v. 69-70

M

Monolithic Brick Pavement 42
Matter of Vital Importance to Every Clayworker, A 46
More About Pug Mills 50
Make Your Income Tax Returns........... 31
Modern Ten Commandments 162
McAvoy, T. B., Meets the Final Summons 40
Mississippi Member Enjoyed Convention 161
Marketing of Clay, The 181
Mayor Jewett's Welcome Address........... 245
Machinery Manufacturers Co-operate with N. B. M. A........... 292
Members National Brick Manufacturers' Ass'n 293
Missed but One Convention in Twenty-seven 297
Major Orton Pleased with Association Message 298
Machinery Reports, The 351
Manufacture of Earthenware, The........... 474
Matter of Man Power, A 647
Machine Wanted for Cutting Pumice Stone 660
Manufacturers of Common Brick in Chicago to Consolidate 753
Midsummer Meeting of the American Ceramic Society 758
Minter System of Burning Brick and Tile 761

N

New York and Vicinity 37, 788
N. B. M. A. Program 49
National Association of Drain Tile Manufacturers, A 51
New Equipment, The 53
N. B. M. A. Convention, The........... 125
N. B. M. A. Numerical Roster........... 135
Northwestern Clay Men Prove Live Wires 144
Nebraska Brick Men Meet at Lincoln.. 146
N. B. M. A. Dinner a Dream, The........... 160
N. B. M. A. Official Report........... 245
Nation's Fire Waste, The 283
National Building Supply Association Calls Charles T. Harris 352
New Jersey Clayworkers to Meet April 12 474
N. B. M. A. Banquet 413
News From Dixie Land 556, 743
New Use for Build with Brick Signs, A 560
No Exemption 576
National Paving Brick Manufacturers' Association 760
New Jersey Clayworkers to Meet at Trenton 764

O

Our Calendar Shower 44
Organization of the Central Ohio Section A. C. S........... 45
Official Announcement 48
Opening Prayer, The 245
Optimistic for Future of N. B. M. A... 298
Our Nation 414
Our State 418
Our City 421
Our Association 422
Our Inheritance 423
Our Jim 424
Obituary—
  Death of T. B. McAvoy........... 40
  Death of George B. Drennan........... 161
  Death of Alfred Yates 657
  Death of A. R. D. Johnson........... 657
  Death of Will C. Thomas........... 657
  Death of J. M. Jenkins........... 657
  Death of Mrs. Christina F. Clippert.. 657
  Death of Harry S. Fate 763
Organization for Common Brick Men.. 538
Organization of our Ceramic Resources for National Service, The........... 542
Oregon Clayworkers Assemble in Portland 546
Ohio Ceramics Meet at Toledo 561
Orders Now Exceed Quota According to Curtailment 661
One of the War's Forced Benefits........... 662
Of Interest to Drain Tile Manufacturers 748

P

Patriotism and Building 26
Plea for Concerted Road Construction, A 43
Program of the Wisconsin Convention. 45
Pacific Coast News 47, 141, 360
547, 692, 749
Program of the Illinois Convention.... 161
President Salmen's Annual Address.... 248
Price of Machinery, The 350
Pave With Brick 429
Producer Gas Fired Dryers........... 436
Pros and Con of the Fuel Situation.... 472
Progress of Trade Acceptances, The... 473
Public Dereliction, A........... 561
Pennsylvania Brick Man Proves an Alibi 560
Postal Taxes 649, 747
Patriotic Duty, A 657
Prepare for the Future 754
Producer Gas for Periodical Kilns........... 760
Pack Up Your Troubles 53

Q

Question of Kilns, A 473
Query for Dryer Experts, A........... 560

R

Road Work and War Work........... 43
Real Meaning of Thrift, The........... 54
Response of Mr. Gregory 248
Report of Committee on Technical Investigation 254
Report of War Service Committee........... 255
Report of the Co-operative Brick Pier Investigation 265
Report of Committee on Resolutions... 290
Report of Committee on Standard Sizes of Brick 292
Reducing the Friction 482
Retail Trade, The 647
Relation of the Highway to the City's Welfare, The 658
Reorganization of the J. D. Fate Co.... 763

S

Storing Ice in Brick Kilns 50
Saving Coal and Daylight 53
Southern Brick Manufacturers Meet... 152
Seen in New Jersey...........190, 528, 765
Some Better Homes Plans........... 181
Sizes of Brick 264
Shingle Roofs Should Be Penalized.... 285
Simplified Accounting for Brick Manufacturers 286
Story of Stone, The 429
Solving the Housing Problem........... 428
Solving the Nation's Transportation Problem 533
Shingle Roof Indicted, The........... 539
Salesmanship in the Clay Industry........... 554
Shelving the Wheelbarrow........... 559
Some Price Comparisons 575
Selling Factor, The 575
Strength of Sewer Pipe........... 642
Science of Advertising, The........... 655
Spring Meeting of New England Section A. C. S. 657
Smokeless Kiln, The 660
Silo Business, The 663
School for Managers, A 663
Second Hand Dryer Cars Wanted........... 764
Standards for Catalogs 761
Study in Heat Transmission, A........... 765
Safety Switch, A 755

T

Trade Literature 54
Texas Member Too Busy Building New Plant 160
Treasurer Sibley's Report 249
Thanks to the Local Committee........... 298
They Cut Some Ice 438
Trade Paper Ideals 580
Turnover and Profit 680
Trucks as Selling Agents 641
Tractor on the Farm, The........... 649
Thoughts of an N. B. M. A. Absentee.. 764

U

Use of the Shale Excavator on the Clay Plant, The 430
United States Fuel Administration to Curtail Use of Fuel for Brickmaking. 439
Unpatriotic Agitation 663

V

Veteran Brickmaker Retires 50
Verbal Contracts Do Not Protect the Seller 137
Vocational Educational Bulletin, A........... 686

W

Waste is Criminal 30
Work of Sewer Pipe Manufacturers' Association 36
Well Made Brick Invaluable for Buildings 40
Well Known Southern Clayworker Passes Away 40
We Should Say Not 50
Women Not Employed on Brick Plant Yet 50
With the Souvenir Dispensers 134
War Conference Takes the Place of Usual Iowa Convention 158
Wants Information About Spark Plugs 160
War Tax Payments 181
Wisconsin Clay Manufacturers' Convention 148
Waste in the Clay Industry........... 260
Wider Field for Machinery, The........... 549
Wages and the Cost of Living as a War Time Problem 552
Why Every American Citizen Should Buy a Liberty Bond 557
Waste Heat from Continuous Kilns... 648
Wants The Clay-Worker on File When the War is Over 660
Westinghouse Employes Raise Two Million for Liberty 639
Clayworking Machinery 680

Y

Yankee Common Building Brick Plant, A 272

VOLUME LXX

FROM JULY TO DECEMBER, 1918

A

American Ceramic Society Meeting.... 21
Additional Power from Lineshaft by Turbine 242
American Ceramic Society to Hold Meeting 244
American Ceramic Society Holds Sucsuccessful Meeting 325
Advice for Conservation of Oil...........332
Advertising 351
Associated Common 351
An Up-to-date Brick and Tile Plant...316
All Restrictions to be Removed Soon...405
An Expert's Opinion 419
American Peat Society...........325
American Clay Machinery Co., Home of.330
American Road Building to Hold Convention 515
Atlantic City Conference 511

B

Bought a French Hotel to Billet U. S. Troops 31
Burning Clay Wares 32, 127, 226
320, 406, 496
Brickmaking in Neutral Europe........... 42
Building Appropriations Recommended.. 44
Business of Babbitting, The........... 45
Button-Hole Talks 126
Bonus System, The 132
Brick Building Fifty Years Ago...........139
Building News from Dixie Land...........136
Building Record for 1917...........139
Building Tendency, The 171
Brick Dryers for Food Drying...........172
Boiler Wall Repairing 235
Boon to Soft Mud Brick Manufacturers, A 235
Building Relieved from Restriction...........268

Brick Manufacturers Entitled to a Fair Return. 246
Brick Outlook, The 259
Brick Dollar a Community Dollar......259
Building Permits for September........356
Brazil Clay Men Look with Favor on Women Workers 332
Brotherhood 511
Back to Brick 350
Brick Construction Over There.........393
Big Order for Potts Machinery to France 415
Brick in the Lumber Shed..............437
Burning Brick in Up-Draft Scove Kilns.419
Mr. Batley Takes Up New Position...449

C

Call to Business, The...................494
Classification of Refractories............504
Ceramists of Northern Ohio Meet.......515
135, 266,358, 408, 409
Common Brick Manufacturers of Nation Organize 36
Ceramic Conference Held in Pittsburgh, A 48
Co-ordination of Building Industries... 49
Current Comment 68, 170, 258
350, 436, 543
Change in International Organization..142
Clay for Brickmaking 145
Chicago Situation, The 143, 552
Cincinnati Brick and Building News..182
270, 363, 419
Corn Versus Cash 238
Clay Exhibit at Chemical Exposition...239
Courtesy Order, A 245
Concrete Not Adapted to Chimney Construction 246
Cheerful Fuel News 227
Classification of Fire Brick............358
Cleaning Machines 351
Coming Day, The 404
Chemistry and Clay 405
California Brick Man Returns from Relief Work Abroad 415

D

District Chiefs for Industrial Furnace Section 47
Differing Ideals 50
Diversity of Products, The..........78, 125
Drain Tile and Sewer Pipe.............228
Detroit Brickmakers One Hundred Percent. Loyal 260
Doing What We Can, All We Can, When We Can 415
Dunn Family Still Growing.............415

E

Evansville and Southern Indiana News. 76
135, 266, 358, 109
Expansion of War Industries Increases Fuel Demands 141
Electrically Separating Clay from Water 144
Effect of Structure in Refractories....233
Eight to One 259
Employer and Crippled Soldier, The....325
Everything Ready Except the Roads...331
Everybody Busy at Gary...............332
Editorial Notes and Clippings.......73, 176
264, 355, 442, 547
Elements of Cost Entering Into the Manufacture of Brick 418
English Publisher Makes Pertinent Com-

F

ment 405
Fuel Administration Modifies Recent Curtailment Order 47
Fuel Conservation in Clayworking Plants 184
Filling War Orders for Brick in England.144
Food Situation, The 172
From Camp to Camp in Motor Car....228
Fuel Economy in Burning Clay Products.229
Federal Trade Commission, The........259
Future of Common Brick, The..........507
Future Price Levels 351

G

Government Announces Preferential Treatment for Hollow Tile Manufacturers 31
Government Takes Over Large Part of Building Brick Output 34
Granite Paving Decreases 44
Ganister Makes Good Showing.........127

Getting Brick Lore to Lumber Dealers..239
Good Signs of the Times...............258
Good Place for Pyrometers.............246
Good Roads of France, The............350
Grecian Building Materials.............437

H

Housing the Farm Tractor............ 69
Hollow Brick Industry, The............498
Hollow Tile Gets Some Preference......171
Highway Improvements for 1919........358
Had His Full Share of Trouble.........403
Hold Liberty Bonds 437

I

Industrial Furnace Section Organized.. 46
Importance of Structure in Refractories, The 137
Industry and the Government..........241
Information Wanted Relative to Chimneys 246
Influenza Adds to the Woes of Manufacturers 333
In Flanders Fields 408
Importance of Highways................225
Illinois Brick Comes Back..............437

J

Just American 449

K

Kiln Man's Estimates, A 247
Kentucky Brick Men Confer............409

L

Large Prospective Demand For Brick in Government's New Housing Program. 41
Lumber Prices 69
Labor Outlook, The 171
Let Us Build Highways 171
Lakewood Line Takes Over New Interests 268
Lakewood Engineering Co. Offers Valuable Service to Brick Industry, The..356
Louisville Brick News 51
Latch String Hangs Out at Pittsburgh, The 413

M

Magnesia and Asbestos Subject of Conference 44
Manufacturing Opportunities in the State of Washington 45
Men and Women Wanted for Government Service 50
Mails Service, The 69
Mica Schist as a Refractory............ 69
Melting Points of Chemical Elements..[illegible]
Machinery Prospects in France..........145
Meanness at Its Worst 170
Machinery Problem, The 171
Machinery Prospects in South America. 240
Modern Motor-Driven Lime Plant, A..329
Motoring from Coast to Coast..........331
Minter System of Burning Brick, The.332
More Than Enough is Too Much.......437
Manufacture of Sewer Pipe, The........500

N

N. B. M. A., Midsummer Meeting, at Atlantic City 38
New Jersey Clayworkers Hold Well Attended Meeting 51
New York and Vicinity.........51, 319, 493
N. B. M. A. Official Announcement.412, 514
New Use for Brick Schooners...........130
National Federation of Building Industries 140
Need for Co-operation in Standardizing the Sizes of Face and Common Brick, The 144
New York Brick Man Goes to France with Construction Division............246
Need for Bricklayers in War-Swept Country 328
New Construction Work Without Federal Permit 405
N. B. M. A. Official Announcement.....412
New Catalogue, The 413
N. B. M. A. Committees................41[illegible]
National Highway Association Conference 415
National Paving Brick Manufacturers Meet in Chicago 510

O

Off for France 47
Origin of Chinese Porcelain.............131

Obituary—
  Death of Wm. A. Bailey..............248
  Death of H. J. Knapp.................333
  Death of Albert L. Flood.............419
  Death of W. B. Kincaid 419
Death of George J. Schwarz..........517
Of Interest to Drain Tile Manufacturers.328

P

Pacific Coast News.38, 126, 263, 323, 444, 498
Patriotic Sheep, The 49
Potters Get Wage Increase..............141
Pledge Idea Spreads, The 232
Proper Drainage Means Much to a Road.244
Percentage of Fuel Required in Burning Brick and Hollow Tile 247
Pennsylvania Brick Man Victim of Influenza 333
Population of the World...........333, 415
Pittsburgh's Municipal Chief Tenders Freedom of City 412
Private Sewerage Question, The.........500
Practical Suggestions About Drainage..503
Pennsylvania Clay Club Bids N. B. M. A. Hearty Welcome 413
Prevention of Longitudinal Cracks in Hard Surface Pavements 414
Putting the Plant in Order 441
Patriotic Display by a Patriotic Brick Man, A 418
Perpetual Foe, The 436
Pathos of Distance, The 124
Pittsburgh, the Convention City........491

R

Restrictions Modified on Manganese Imports 37
Roller Bearings 83
Roadways or Waterways 69
Railway Administration 69
Regulating the Shift of Labor..........125
Refractories 137, 410, 504
Recent Developments in Ceramics......317
Railroad Administration. 409
Railroads—A Question 437

S

Safety First Relay, A 78
Speeding Up the Line Shaft 83
Seen in New Jersey............44, 131, 327
Suggestion for After-the-War Preparedness 68
Strangling Efficiency 68
Social and Economic Reconstruction....171
Survey of Fire Prevention Conditions at Ports Begun 268
Suggestions for Utilization of Brick Dryers 247
Standard Tests of Refractory Materials.324
Sewer Pipe for Rat-Proof Foundations.328
Some Shifting in Magnesite............328
Silica Report, The 331
Shut Down, But Not Complaining......362
Suggested Means of Saving Fuel, A....417
Shale Rock Oils 444
Sanitary Conveniences for Country Homes 501
Some Pottery Milestones 414
Structural Ornamentation 506

T

Trucking Both Ways 49
Traveling Salesman, The 35
Terra Cotta Playhouse, A 123
To Save Fuel in Industrial Furnaces...141
Tightening Down on Private Opinion...252
Trucks and Their Drivers 259
Traffic Thrills Along Lincoln Highway..231
Thanksgiving Prayer, A 436

U

Universal Mileage Ticket, A 323
Uncle Sam's Dormitories 315
Uncle Sam Will Take Care of His Boys.499
Use of Light Brick, The 417

W

What a Soldier Costs 244
War Service Work, The 245
Wise Business View, A 248
Wants Machinery for Making Adobe Brick 246
What the Red Cross is Doing...........402
Westinghouse Went Over the Top......446
Wants a Remedy for Klinker Brick.....419

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. LXIX. INDIANAPOLIS, IND., JANUARY, 1918. No. 1.

The Convention City

Where the Thirty-second Annual N. B. M. A. Convention will be held February 10-16, 1918. Its central location and many attractions should insure a record attendance. Never before was there greater need of close co-operation in the clayworking world, to solve the many serious questions now vexing the manufacturers.

THE Hoosier Capital is a city of many attractions. It was selected as the place of meeting for the thirty-second annual convention of the National Brick Manufacturers' Association and the allied organizations, chiefly because of its central location. Geographically, it is the center of the State and the actual center of the population of the United States is but a few miles distant, so it may well be called the Central City. It is the greatest inland railroad center in America, hence Indianapolis has naturally become famous as a convention city. Local authorities claim that the average attendance at conventions held here is larger than in other cities claiming distinction as convention centers.

State Capitol Building, Indianapolis.

It has been twenty-seven years since the N. B. M. A. has honored the Hoosier city, having first met here in January, 1891. Since that time a marvelous change has taken place. From a comfortable provincial town, it has grown to be a great metropolitan city, with splendid public buildings, chief of which is the State Capitol, a noble structure which stands in the center of an eight-acre plot of ground in the heart of the city.

The most conspicuous structure within the city is the famous Soldiers' and Sailors' Monument, which for grace and beauty has few equals either at home or abroad. It was erected in memory of the soldiers of the Civil War, and was dedicated in 1902, since which time it has been the mecca of sightseers and lovers of monumental art from all corners of the earth. Its crowning figure, "Miss Indiana," stands nearly three hundred feet above the street level. A magnificent view of the city and surrounding country is obtained from the top of the monument, which is reached by an elevator and stairway from the base of the interior of the shaft.

The Federal Building, or postoffice, in which is housed the Federal offices, Courts and officials, is one of the finest buildings west of the Nation's capital. It is located a block north of the monument. The most modern of the city's public structures is the new City Library, recently occupied and located five blocks north of the Federal Building. It is in part a tribute to the memory of our Hoosier poet, James Whitcomb Riley, who, some time before his death, bequeathed the city a part of the ground on which the building is located.

A Great Civic Center.

Being the chief city in the State, it is naturally the center of the educational, commercial, industrial, religious, political and social life of the State. Most of the leading fraternal organizations, such as the Masons, Odd Fellows, Knights of

Pythias, etc., have erected imposing structures for lodge purposes, and the various theaters rank among the best in the land. Murat Temple and Theater is a conspicuous example of fraternal enterprise. It is conceded to be one of the largest and finest playhouses in America. The city is really proud of its latest acquisition in the way of an amusement place, the Circle Theater, which holds a place unique in the world of theatricals. It is located on the Circle, facing the Soldiers' Monument. Though erected as a picture show house, it represents an investment of over half a million dollars. Three thousand one hundred seats are contained in its collossal auditorium. Its gigantic stage, one of the largest in the world, makes possible the presentation of stage spectacles and elaborate tableaus, which have made it famous for the production of screen dramas.

Visitors interested in religious affairs will find their chosen denominations represented in one or more of the many churches, the spires of which are conspicuous in all portions of the city. The Y. M. C. A. has a splendid home at the corner of Illinois and New York streets, where the youth of the city can find wholesome recreation and healthful educational influences. The Young Women's Christian Association has an equally attractive home, equipped with every modern facility from a swimming pool to entertainment hall, where working girls find a safe harbor and a means of recreation after their day's labor.

THE INDIANA STATE SOLDIERS' AND SAILORS' MONUMENT IN

A Hotel With an International Reputation.

Among the chief essentials of a convention city are good hotels, and in this respect Indianapolis is peculiarly fortunate. There are more than twenty hotels within its confines, the largest and best of which is the Claypool, located at Illinois and Washington streets, four blocks north of the Union Station, just a pleasant walk for the traveler who, after a ride on the "choo choo" cars is glad for an opportunity to stretch his legs, when the weather is propitious. When it is not, a trolley car can be taken at the station which passes directly in front of the Claypool. Taxis do the same, of course.

The Claypool is a stately pile, occupying a quarter of a city block, is strictly fireproof and affords every modern convenience. Its lobby is one of the finest in the land. The mezzanine floor and parlors are luxuriously comfortable. Its most famous feature is the Riley Room, so called because a birthday dinner was given in this room to the beloved poet Riley, but a short time before his death, at which were gathered many of the noted literateurs of the day. The hotel is exceptionally well equipped for convention purposes; its main assembly room, on the eighth floor, will accommodate nearly one thousand people. The Palm Room, on the ninth floor, will accommodate more than half as many, and there are several lesser meeting places which are adequate for smaller gatherings. The writing room and study, located on the main floor, is very inviting, as are its cafes, lounges, etc.

Near the south entrance of the hotel is a bronze tablet, marking the place where formerly extended a balcony from which Abraham Lincoln, during his stay in the city on his way to his inauguration in Washington made an address to the people of the Hoosier Capital. The tablet bears the following inscription:

> Abraham Lincoln, on his way to Washington to assume the Presidency, in an address said: "I appeal to you to constantly bear in mind that not with politicians, not with Presidents, not with office seekers, but with you, is the question, Shall the Union and shall the liberties of this country be preserved to the latest generations?"

A Great Convenience for Travelers.

All of the railways trains enter the Union Station, a decided convenience to the traveling public. In normal times, nearly two hundred trains arrive and depart from this station every day. It is claimed that no other city in the country has interurban service equal to that of Indianapolis. There are 694 interurban cars entering the city daily, all of which run into the Interurban Station, which is a block north of the

Claypool Hotel, and which is the greatest station of its kind in the world, having been built at a cost of $1,000,000. In addition to being the terminal for all interurban lines, it is one of the finest office structures in the city.

Almost any town of any importance within one hundred miles of Indianapolis can be reached by trolley, fast express trains making the service very satisfactory to the traveler whose time is limited.

Features of Special Interest to Clayworkers.

There is but one important clay plant within the city limits, namely, the United States Encaustic Tile Works. As will be seen by the accompanying cut, it is a large establishment. It is the pioneer encaustic tile plant in America. It was started in 1877 and has continued in operation ever since, and has changed hands but once in the meantime. The present executive officers, Mr. C. M. Cooper, president, and W. F. Landers, secretary-treasurer, have grown up in the business, their fathers having been actively interested in the plant up to the time of their demise. This plant was the first to introduce dull finish glaze, and they are now making a line of beautiful floor and wall tiles in a variety of colors and of an unsurpassed quality. The plant is located on Sixteenth street, west of Capitol avenue, and can be reached by street car from the Claypool Hotel. Visiting clayworkers are always welcome, and convention week the latchstring hangs out. And while Mr. Landers himself will be busy at the convention, he hopes to welcome those of the delegates and the ladies accompanying them who may care to witness the modus operandi of making encaustic tiles. Natural gas is used for burning the tile, and has been for many years, the company owning gas wells of their own, some twenty miles distant from the city.

MONUMENT PLACE, THE CENTER OF THE HOOSIER CAPITAL.

The Home of Potts Machinery.

Another pioneer firm in its line is that of C. and A. Potts & Company, manufacturers of tempered clay machinery, brick molds, clay disintegrators, etc. George Potts, Sr., who passed to his reward some years ago, was the inventor of the disintegrator which bears his name and which has proved a boon to many engaged in the brick business. Potts machinery has distinctive qualities. Their shops are located at 816 West Washington street, where their friends and patrons will be welcomed at any time. George Potts, Jr., will be at the Claypool, with headquarters in Room 823, where he hopes to greet every delegate.

Where the Smiles Come From.

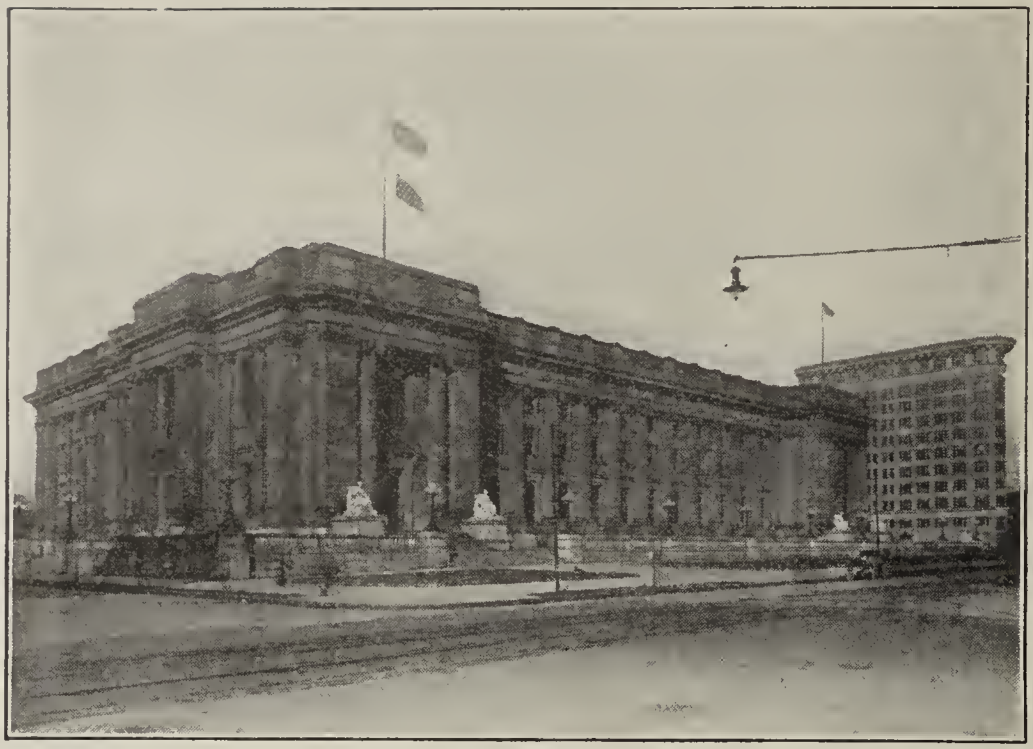
Many of the readers of the Clay-Worker have reason to look pleasant when they think of the Standard Dry Kiln Company. Those who are using the Standard Dryer, especially, but brickmakers in general, who have been reading that tabloid publication, "Book of Smiles," issued now and then, which makes those who have troubles forget them, temporarily at least, and talks shop so cleverly that even the serious side is always pleasant to take, need not be told that a pleasant welcome awaits them at the factory of the Standard Dry Kiln Company, which is located at 1547 West McCarty street. Robert Elliott, Sr., is an old-time member at N. B. M. A. conventions, but this year visitors to the convention will have an opportunity also to meet Robert Elliott, Jr., and other members of the firm, who will be at home in Room 812 at the Claypool Hotel throughout convention week.

The Indianapolis Terra Cotta Company.

Brightwood is a suburb of Indianapolis, and in its confines is a snug little clay plant, the Indianapolis Terra Cotta Company, which for many years was under the direction of that prince of good fellows, Ben Walcott. Since his death, Superintendent George H. Lacey has assumed the general management. Visitors will be welcome to inspect the plant at any time, but those who want to see Mr. Lacey personally will do well to look for him at the Claypool. They manufacture structural terra cotta, and have many substantial monuments here in their home city to their skill, their products being used in a number of conspicuous structures.

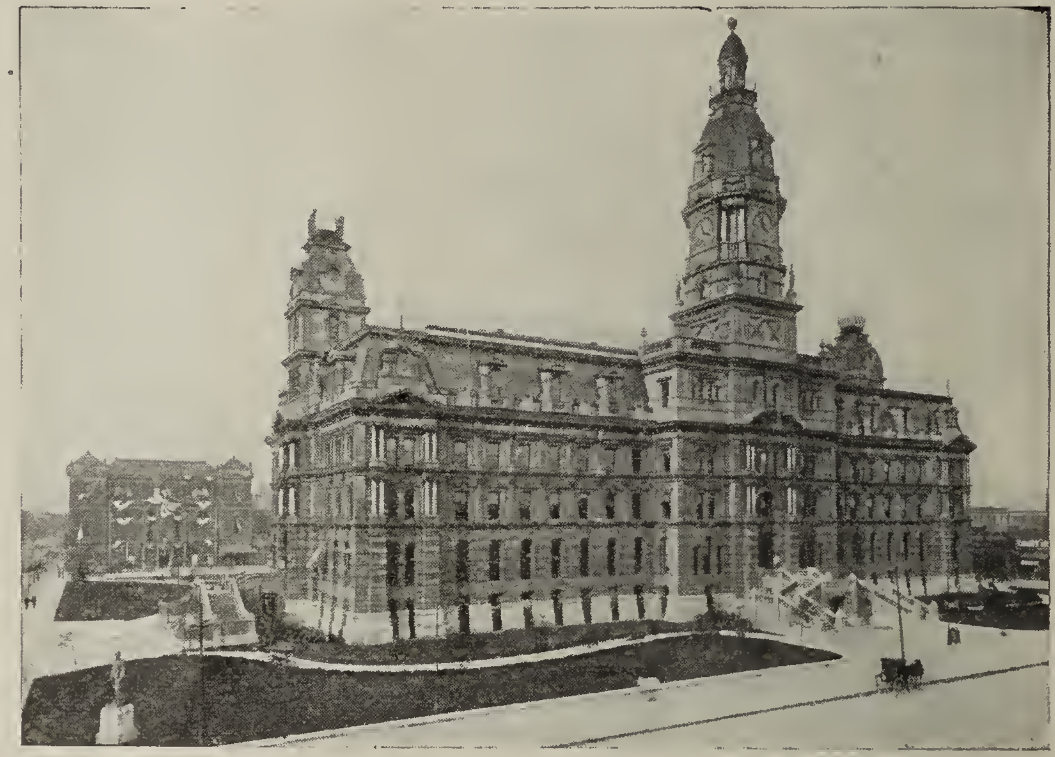
The National Dry Kiln Company.

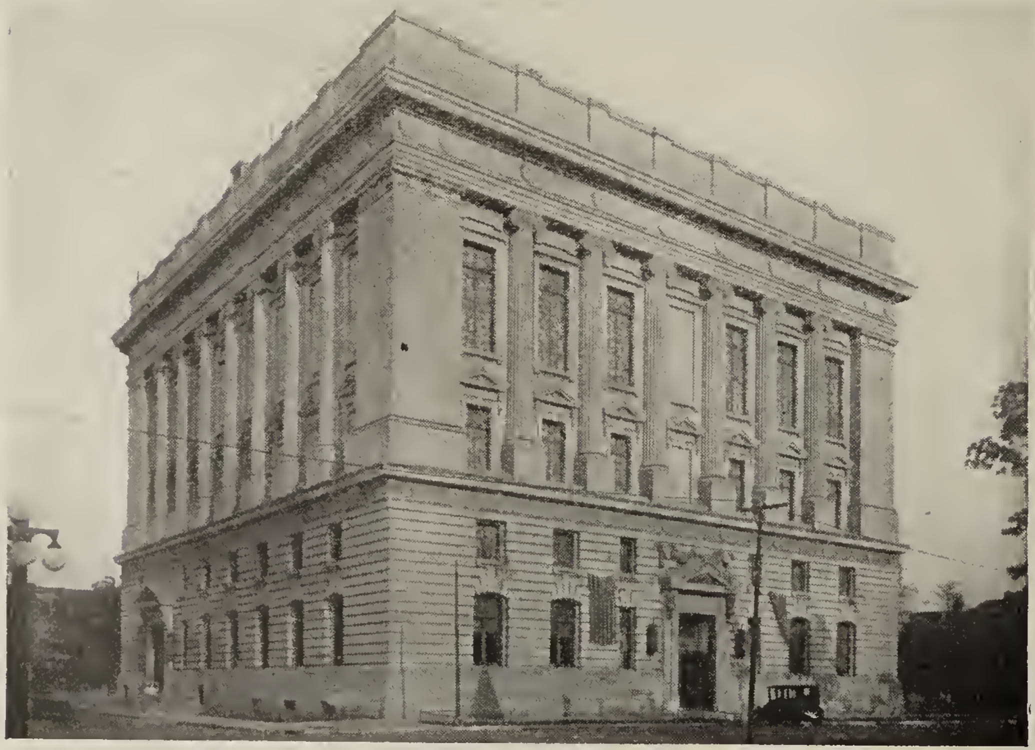
Indianapolis is also the home of the National exhaust steam dryer. Mr. Ira A. Minnick, the presiding genius who directs the company's affairs, will usually be found during working hours at their factory at 1118 East Maryland street, but con-



Federal Building, in Which the Postoffice, U. S. Court and Revenue Offices Are Located.

The Marion County Court House, Situated in a Busy Commercial Part of Indianapolis.





The Masonic Temple, One of the Most Beautiful Structures Of the Kind In the Country.

vention week he expects to be busy doing buttonhole stunts at the Claypool.

A City of Homes.

The convention city is a real American city. It is a city of homes; perhaps no other city in the nation has a larger per cent. of home owners in proportion to population, which now exceeds 300,000. Of course, the best homes are brick homes, and a large percentage of those erected of recent years have been constructed of Hy-Tex brick. The offices of the Hydraulic Press Brick Company are located on the top floor of the Board of Trade Building, corner of Meridian and Ohio streets, where visitors are always welcome. The genial manager, Mr. E. C. Hervey, is an animated compendium of knowledge of face brick. Their display rooms are very attractive. The latest designs in rough texture brick are shown in all colors, and it is a real treat to view the color schemes that have been wrought so cunningly in Hy-Tex brick.

Miss Indiana Welcomes You From the Top of the State Soldiers' and Sailors' Monument.

The Western Brick Company, with plants at Danville, Ill., has modest but very attractive display rooms in connection with their offices in the Hume-Mansur Building, on East Ohio street. Mr. A. E. Davis, the affable sales manager for Indiana, may be too busy at the Claypool convention week to do the glad hand act at the office, but able assistants will perform that function. Some of the finest structures in Indianapolis have been constructed of Western brick.

The Clay Products Co.

The headquarters of the above named company is on the eighth floor of the Lemcke Annex, on Pennsylvania street. They have extensive plants at Brazil and other points devoted chiefly to structural hollow tile, but they are also large manufacturers of conduits. This firm is the largest producer of conduits in the world. In 1912 they manufactured at their Brazil plant one-third of the output of conduits in the United States. Mr. H. H. Titsworth, president of this company, expects to spend most of convention week at the Claypool Hotel.

Brick Dealers and Supply Firms.

There are a number of display rooms conveniently located in the downtown district, where the visitors may see face brick of nearly every kind and make. The most important of these are the A. B. Meyer & Co., 17-19 North Pennsylvania street; Indianapolis Mortar and Fuel Co., 407 Odd Fellow Building, and the Indianapolis Coal Co., 27 South Delaware street. Other brick dealers and supply firms in Indianapolis are W. B. Bennett & Co., Thirtieth and L. E. & W. Railway; Indianapolis Coal Co., Newton Claypool Building; Murphy Bros., 1101 Odd Fellow Building; Hoosier Brick Sale Co., of which Fred B. Adams is manager, Thirtieth and L. E. & W. Railway, and Frank M. Dell Co., Southeastern avenue.

The Adams Clay Products Co., the Brazil Face Brick Co., the Brooklyn Brick Co., the Natural Products Co., William E. Dee Clay Manufacturing Co. and Veedersburg Brick Co. have offices in Indianapolis.

The convention city is headquarters for many trade publications. As our readers know, The Clay-Worker is among the oldest industrial magazines published in this country. It is now in its thirty-fifth year, and from its earliest day has carried the name and fame of Indianapolis to the entire clayworking world. Its offices, which are now located on the ground floor of the Castle Hall K. P. Building, at the corner of Ohio and Hudson streets, have been visited by many notables in the field of clayworking, some of whom have made special trips for the purpose of paying their respects to its Editor, whom they have come to know through the columns of The Clay-Worker and his long service as Secretary of the N. B. M. A. Thirty-two years is a long time in the life of the average mortal, and the fact that he has served the National Association during that period of time is almost a world's record. The latchstring hangs out always. We expect every clayworker in the land to give it a tug convention week.

In Indianapolis are located the homes of some of the most distinguished people of this country. Here reside Thomas F. Marshall, Vice-President of the United States; Ex-Vice-President Charles W. Fairbanks; Albert J. Beveridge; the noted writers, Booth Tarkington and Meredith Nicholson, and scores of other famous literateurs, artists, lawyers, statesmen and other professional men. Perhaps nearest the hearts of not only the people of the Hoosier capital, but of the State and Nation as well, is the home of the late Hoosier poet, James Whitcomb Riley, situated on Lockerbie street. He lived there for more than twenty years. His discovery of Lockerbie street impressed him so much that he indicted a poem to it that first appeared in the old Indianapolis Journal. The part he refers to is but a block long, with a roadbed of gravel, green sward on either side, and fine old trees, with flowers and lawns in front of the old-fashioned houses. The march of improvement has not marred its original quaintness and beauty, and it is yet as when he wrote:

> "O, my Lockerbie street! You are fair to be seen,
> Be it noon of the day or the rare and serene
> Afternoon of the night—you are one to my heart.
> And I love you above the phrases of art,
> For no language could frame and no lips could repeat
> My rhyme-haunted raptures of Lockerbie street!"

A city of homes, with a population the size of Indianapolis, must needs have a good boulevard and park system. Indianapolis is proud of its many beautiful parks, where the people find pleasure as places of recreation during the summer months. The boulevard system is far more than adequate, connecting the many thoroughfares with the parks and winding their way, encircling the greater part of the city and serving as the autoist's chief delight on Sundays and holidays. The boulevards lead to the many points of interest, including the far famed Speedway and Fort Benjamin Harrison, both of which should be most interesting to the brick manufacturers of the country. The famous Speedway is paved with brick, and at Fort Benjamin Harrison, which is a permanent military garrison, are thirty-eight beautiful brick built barracks, administration building, officers' residences, stations, store buildings, etc., in the construction of which over eleven million brick were used, furnished by the Western Brick Company.

Interior of the Circle Theater, the Largest Motion Picture House in the Central West.

One good way to keep trouble from dogging your footsteps is to turn and face it.

PATRIOTISM AND BUILDING.

TO A GREATER extent than any other country engaged in the great conflict, the United States is compelled to recognize the existence of a vociferous patriotism, that speaks with a Potsdam accent and somewhere conceals the "Made in Germany" brand. "Don't do this, and don't do that, because by refraining you will help win the war," urge its exponents and the astounding feature about the situation is that almost any one can issue a set of soap-box don'ts, and, if they are even slightly camouflaged with some of this pseudo devotion to national aims, they are swallowed whole by a very large part of the population, even including many men of promiience in the professional and business worlds—men who ought to be able to do their own thinking—but apparently lack the time. It is probably true that a lot of the attempts to shut off industrial activity, to curtail trade and cripple commerce, are merely he resul tof silly sentimentality, but some of them unquestionably are Prussian propaganda.

In one of these classes or the other—and it does not matter much which—belongs the effort that has been made in recent months to curtail the legitimate building activities of the nation.

War necessarily shuts off purely speculative building operations. In fact, it renders them quite impossible without any prohibitory legislation, and this is as it should be. But the American people today stand in actual need of many millions of dollars' worth of building improvements that are in abeyance largely because a few people who pose as economists, but who in reality are either empty-headed or pro-German, have hinted that it is unpatriotic to proceed with such projects under present conditions.

No building project ought to be undertaken during the war if its prosecution will hinder the Government by taking either materials or labor needed in war work. That is axiomatic Americanism. But no legitimate building project should be deferred if it can be carried into execution without interference with the country's war work.

Many paper-shelled analysts have jumped to the conclusion that because England was forced to curtail building early in the war, the United States must do likewise. They have overlooked the fact that England's situation and ours are in nowise alike. How do they differ?

Before the war, England imported building materials to meet her requirements—steel from the United States, France, Belgium and Germany; cement from the same sources; timber from the Baltic and from North America, etc. A continuance of building after the exhaustion of the stocks on hand at the beginning of the war would have meant the continuance of imports of materials. Every foot of cargo space obtainable was needed for imports of foodstuffs and munitions. Obviously, under such conditions, building must yield.

Again, the white population of the entire British Empire is in numbers about half the white population of the United States and possessions. This is a white man's war. The problem with England was one of defense against sudden and violent onslaught for which the nation was almost wholly unprepared, and the obvious thing was to draw into active service every able-bodied man who could be induced or forced to serve, barring only those needed to maintain war industries. With imports and exports minimized by the submarine war,

Traction Terminal Building Through Which 694 Cars Pass Daily.

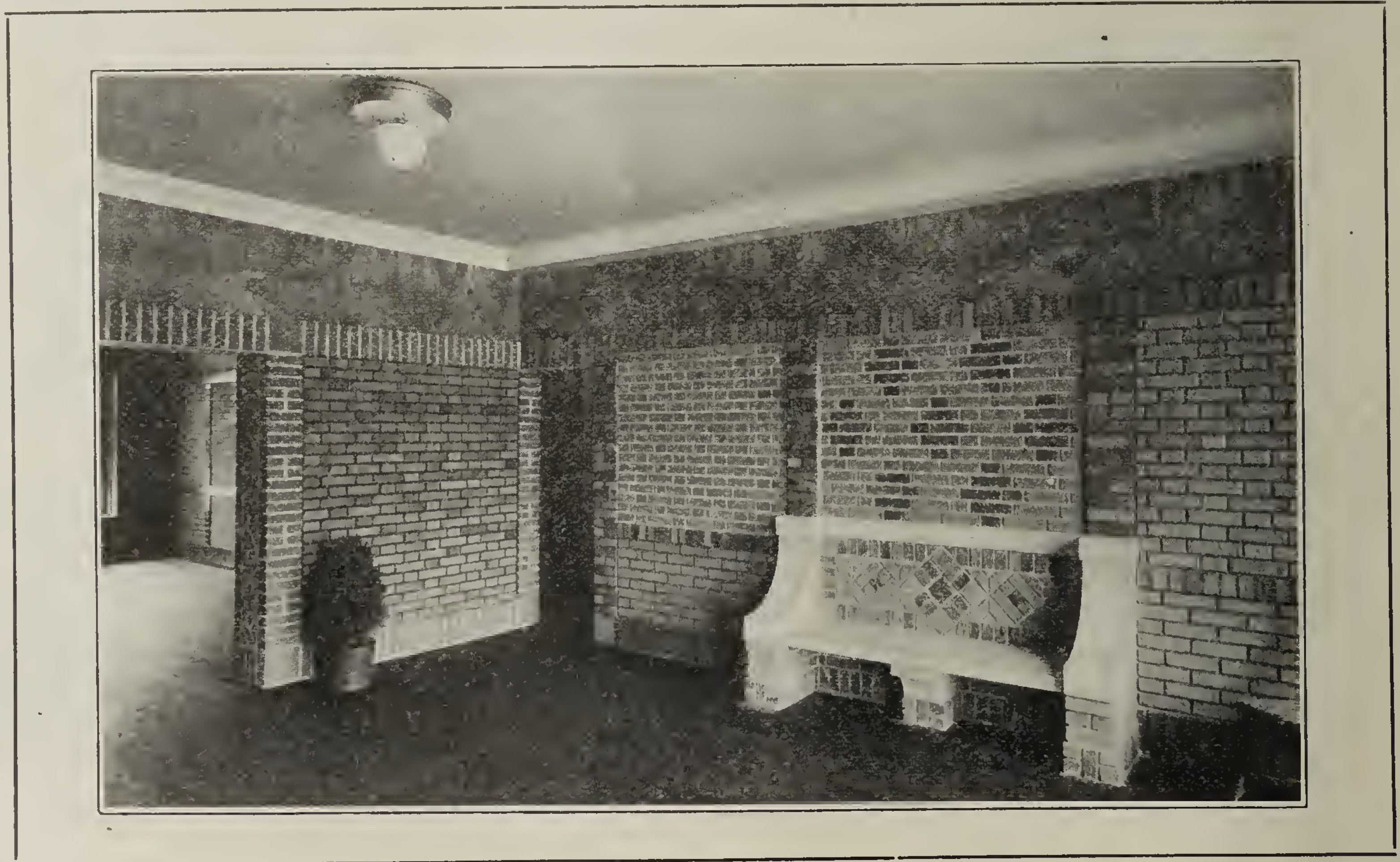
Murat Temple and Theater.

Union Station, Indianapolis.

Bridge Over White River On Boulevard Leading to Speedway.

other industries had to curtail or cease operations altogether, so their interests were not greatly affected by the drive for a great army that absorbed at random the skilled mechanic and the country gentleman, the laborer and the financier. All were needed in the trenches and the fleet. But with the United States the problem is altogether different. The need, with us, is for an army of experts. England's need was numbers; ours is numbers, too, but in less degree. In much greater degree it is an army of super-efficiency, so fitted for the fight that it will make every blow a staggering blow. It must not be so large that we cannot maintain it, furnish it supplies, munitions, equipment and financial backing; and this army, assuming that the war may last another three years, will not constitute any such draft on our male population as England had to face at the outset.

Splendid Brick Residence of Stoughton Fletcher, on the Millersville Road, on the Way to Fort Benjamin Harrison.



A Corner of the Display Room of the Hydraulic Press Brick Co., Indianapolis.

The building industries and trades of the United States furnish a living to hundreds of thousands of men and women who are not now needed for war service, but whose ability to provide for themselves and to help carry the financial burdens of the war is of the highest consequence.

The fabrication of materials used in building in the aggregate represents an industry capable of paying in taxation the cost of maintaining a great army. But a dead or dormant industry is not taxable.

If the industries and labor dependent on building are to stagnate until peace comes, the country thereby must lose one of its great war resources—the ability of those industries and that labor to produce revenue for the furtherance of the war.

No one but an admirer of the German theory of internal financing can afford to indorse any propaganda tending to depress the earning power of the American people at a time like this. Unless we, as the Prussians have done, are to adopt the dog-chasing-his-tail monetary system, the system that utilizes debts as the security for bond issues, we must earn as we go. This is very largely a pay-as-you-enter war, as far as we are concerned, and to pay we must earn.

Not long since, an important financial house announced that it would no longer advertise its facilities for lending money for building improvements, because it believed that such advertising would be unpatriotic.

Not long since, the Governor of a State and the Mayor of a great city loudly proclaimed their belief that public improvements should stop during the war.

Not long since, a banker of national prominence said that there is no danger that curtailment of industries will impair the people's ability to foot the war bills.

But how would industries devoid of income pay taxes? How will that financial house continue to contribute to the war cause if it ceases doing business? How will earnings based on public improvements be levied against if there are no earnings?

No loyal citizen will advocate the doing of an hour's labor or the sale of a dollar's worth of merchandise if thereby the welfare of the American people is to be impaired. Prosecution of the war to an absolutely successful conclusion is the first consideration before us, and nothing must be permitted to stand in the way. If we bear in mind the obvious fact that the industrial stagnation that some people are so actively endeavoring to bring about is one of the very things that would most effectively stand in the way of attaining that foremost object, it will be possible to judge a little more accurately the merit of some of the anti-building propaganda that is prevalent.

The demands on American industries after the war are going to exceed the utmost possibilities of production. If we carry out every plan involving expansion of manufacturing facilities, better and more efficient housing of labor, betterment of transportation facilities, addition to resources for storage and distribution of American products, the American business machine will find itself overwhelmed, nevertheless. What greater commercial victory could Germany hope for than the success of a propaganda that would bring us into the peace councils as unprepared to meet the demands of international business as we were as unprepared in 1914 to meet the exigencies of international politics?

The test of any building project is twofold, but very simple. Is it going to meet an actual need? Will it enable a farmer to produce more or better food? Will it enable a manufacturer to turn out in greater quantity something for which there is a legitimate demand? Will it enable a railroad to give better or greater transportation service? Will it enable a municipality or a State to take better care of its people, to give them the governmental service to which they are entitled? Will it enable a producer so to live that his productive capacity will be increased? Will it afford the business interests of a great city or a small community facilities that they need to maintain their earning power? If it will do any of these things, then the other test is, will it interfere in any

UNITED STATES ENCAUSTIC TILE WORKS

Birdseye View of the United States Encaustic Tile Company's Plant, Indianapolis.

way with the conduct of the war, by taking materials, transportation or labor needed for war purposes?

The American people have altogether too much hard sense to be long misled by dishonest or incompetent advice on a problem as great as this. Building is going on, just as all legitimate industries are going on, with every honest man endeavoring to conduct his affairs so as to render the Government every bit of loyal assistance in his power. We are going to remember that if the cost of this war is not to be saddled on posterity we must keep business going, not as usual, but as never before. We must regard the cost of the war as an added overhead that every business must help to pay; and we must remember, too, that only a GOING business can contribute.—American Architect.

Written for THE CLAY-WORKER.

BUTTON-HOLE TALKS.

Circumstances Alter Cases.

ABSORPTION is a pretty dependable quality anyway. It's always reliable, ready to act, and does not have to be wound up or fed gasoline. The sponge is not active or aggressive, but it laps up the stuff quietly and effectively and holds what it gets. If I can only keep on running against philosophers and can linger on in my career for a hundred or so years, even I may acquire some information by the sponge method. Anyway, they all seem to recognize me as acquiring information by the sponge method as soon as they have handed it over to me, and go right at it to unload on me and get it right off their minds.

W. D. Gates.

This one was loaded, was insistent, and went right at me.

"You should never make up your mind until you are thoroughly informed on the subject on which you are going to act and know all about it. look at it from all viewpoints first. For illustration: The other day I was going down to Champaign on the Illinois Central Railway, and boarded the car at Fifty-third Street, and, as I had not finished my cigar, I went into the smoker. Each seat was occupied by one or two in the first half of the car, which was divided in the middle by a partition, so I opened the door and stepped through to look there. Immediately a man sitting a few seats from the door turned, and, looking me over, called out, 'You can't come in here.' It was so unusual that I wondered and was angered, but I answered, 'But I am in here,' whereat he took another look at me and called out, 'Well, you can't stay in here.' Looking about, I saw that the seats were fully as well occupied as in the other part of the car, so I very truthfully answered him that 'I didn't want to,' and went back and took a seat in the other part. The thing bothered and annoyed me, though, and I was indignant at it. What right had he to order me about and tell me I couldn't come in there? It kept bothering me, recurring from time to time, try as I could to banish and forget it. Finally, as the train stopped at Kankakee, I noticed every one looking out the windows, and, on looking out to see what had attracted them, I saw a long-geared bus, into which they were busily stowing all the people I had seen in the front end of the car for the purpose of taking them to the State Insane Asylum.

"Needless to say, I felt no more resentment for the man who had told me I couldn't come in there or stay there. Instead of feeling insulted by his remarks, I felt complimented. He had, after one quick look, certified to my sanity, and I had been feeling grouchy that he had done so because I was not fully informed. I only wondered that he had not greeted me by saying, 'Come right in; we have been waiting for you.'

"We often misjudge through not knowing all. We jump at many conclusions. Life is such a big thing, so complex, one incident so dependent on another, that we are apt to see a little part only and not get a comprehensive view of the whole question. In the case of which I speak I felt insulted, and had I not happened to look out the window, should have so continued to feel, but, happening so to look, I thereafter felt complimented instead of insulted." GATES.

CERAMISTS OF NEW ENGLAND ORGANIZE.

THE New England section of the American Ceramic Society was organized on December 14, 1917, at Worcester, Mass. A special meeting, with that sole purpose in view, was held at the Norton Company's plant in the Administration building. The attendance consisted of a strong representation from the Norton Company and other New England manufacturers.

Mr. Ross C. Purdy spoke on "The Influence of Scientific and Technical Societies on the Development of Men and Industry." The resolution of strengthening and extending the work and influence of the American Ceramic Society in the New England section, which includes the Albany (N. Y.) district, was considered and the following officers were elected:

Chairman A. A. Klein, The Norton Co., Worcester.

Secretary, C. L. Walduck, Grueby Faience & Tile Co., Boston.

Councilor, C. H. Kerr, American Optical Co., Southbridge.

A program committee was appointed to arrange for the next meeting, which will probably be held in Boston.

Adjournment was in order and a trip through the Norton plant followed.

A dinner was arranged for at 6 p. m. at the State Mutual Building restaurant, and ended with short talks from all those present. The meeting certainly proved to be a most successful way to broaden the scope of the society's activities and increase the membership. C. L. WALDUCK, Secy.

WASTE IS CRIMINAL.

"To waste now is nothing short of criminal."—Secretary of the Treasury McAdoo.

The duty of the American people to economize in consumption of food and all other materials as well as save money, can not be too often or too strongly urged upon them. The duty is so imperative, its observance so vital to our country's success, that it should be kept constantly before them. The proposition is plain and understandable. We have lessened the productive powers of the country by taking 2,000,000 men away from the productive forces of the country; instead of producers of one kind or another, the soldiers are consumers of the products of our farms, factories and mines, and when the munitions they expend and will expend against the enemy are considered they are tremendous consumers of the manufactured products of the country.

A tremendous amount of the manufacturing energy of the country has been withdrawn from manufacturing the things we use in peace and put to manufacturing the things we use in war. The total loss to the country of the productive energy of our soldiers and sailors and the diversion of a great portion of the other productive energy of the country to war purposes lessen to a great extent the amount of material and supplies produced by the country.

To this condition of lessened production and increased consumption of and by our own men must be added the extraordinary demand made upon this country to supply the armies of our allies and to a great extent their population with food and other material.

We must meet the condition that confronts us in two ways —by the strictest economy in consumption, for every pound we refrain from using adds a pound to be devoted to the uses of our army and navy and the military forces of our allies; and by speeding up our production to the limit. The American people are going to do all that they know to be necessary to win this war—to shorten this war. They have only to realize the imperative duty of economy in saving and they will economize and save.

Written for THE CLAY-WORKER.

BRICK NEWS FROM SOUTHERN INDIANA.

The BRICK MANUFACTURERS of Evansville and southern Indiana report a fairly good trade at this time, considering the car shortage and other things. The plants in Evansville have been operated on fairly good time during the past month. That is, they have been run when sufficient men could be secured to operate them. The next draft is expected to take a large number of men away from Evansville, and the brick industry will suffer because of this, along with other industries of that city. The car shortage just now is the greatest handicap that the brick manufacturers are called upon to face. One manufacturer at Evansville remarked the other day that several large orders received by his company had not been delivered because the company had been unable to get sufficient cars. It is the belief now that since the government has taken over the railroads that the car shortage situation will be relieved some. Manufacturers say that the car shortage menace is greater than it was this time last year and no relief was in sight until the government took over the railroads to operate them during the war, and this is only a hope that the situation will be relieved some. General trade conditions are good in this section. The building permits for the city of Evansville for the year 1918 fell short of the year previous. The month of December was only about $3,000 short of the December of the preceding year. In the opinion of brick manufacturers there will be some picking up in the building line later on in the early spring, but it is not believed that conditions will become normal until the close of the war. Work is in progress on the new Junior high school building in Evansville, the brick for this job having been furnished by the Standard Brick Manufacturing Co. Evansville architects have just completed plans for a new Carnegie library at Rockport, Ind., that will cost in the neighborhood of $17,000. The building will be built along similar lines as the two Carnegie libraries in the city of Evansville. John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., says the out-of-town business of the company has held up fairly well, but that this has been crippled some by the car shortage.

A notice that products of pottery and glass manufacturers have been listed as non-essentials by the federal government has been sent out to the leading manufacturers of the middle west, it has just been announced. Many of the manufacturers have taken this to mean that their plants would be closed for lack of transportation facilities in a short time by the government, but no action has been taken up to this time. The potteries in Evansville have felt the effect of the car shortage along with the other industries, but they have been grinding away and have been doing a nice volume of business.

Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, were active in the recent Red Cross drive in Evansville and Vanderburg county for new members. Both Messrs. Kleymeyer and Andres worked on the Chamber of Commerce teams and secured many new members.

Kleymeyer & Klutey, brick manufacturers at Henderson, Ky., twelve miles below Evansville, have been placed on the roll of honor of the Red Cross, as all their employes have taken out memberships in this organization, which is a most splendid showing for the company and speaks well for the patriotism of all the men connected with the plant.

Mr. John C. Andres, secretary and treasurer of the Standard Brick Manufacturing Company, has been reappointed a member of the water works board in the city of Evansville. Mr. Andres has taken great interest in the work and his knowledge of building and contracting has made him one of the most valuable members of the board. He will serve on the board for another four years.

G. C. Landgrebe, general manager of the Huntingburg Pressed Brick Works at Huntingburg, Ind., has just closed a contract with the federal government for the shipment of one million brick to Jeffersonville, Ind., to be used in the construction of the government supply depot at that place. Mr. Landgrebe expects to close another large contract within the next few days, he announced. His plant is working at its limited capacity to fill other orders that are continually flowing in. Huntingburg brick plants have been extremely busy for the past several months. The Southern Clay Products Company, of that city, last month shipped a big order of brick to New Albany, Ind., to be used in the construction of a large fire station that was destroyed by a tornado about a year ago.

Henry Clements, of the Cannelton Sewer Pipe Company, who was recently appointed fuel administrator of Perry county, Indiana, has had his hands full lately handling the government's business and his own business, too. But Mr. Clements is equal to the occasion, for he was mayor of Cannelton for four years.

In spite of war times it is expected that Evansville will build her usual number of improved streets during the coming year, and some of these will be constructed of brick. The brick streets put down in Evansville twenty and thirty years ago are just as good as they were when constructed, and this is another argument to show that no material is better than brick in the building of streets.

Work will start within a short time on the brick apartment house of Charles A. Erskine, flour manufacturer and state senator at Evansville. The brick for the apartment will be furnished by the Standard Brick Manufacturing Company, of Evansville.

A HOOSIER.

MAKE YOUR WAR INCOME TAX RETURN.

Mr. Salaried Man, Wage Earner, Farmer, Merchant, Professional Man, Tradesman and Others:

At the request of the Government, we wish to direct your attention to the imperative necessity for making your income tax return before March 1.

Don't think the income tax law doesn't apply to you. You may be pretty sure that it does.

Did your salary, or wages, or income, amount to $84.33 a month (that is, $1,000 a year, or over) during 1917? If so, and you are not married, you must make a statement of this income to the Government. If you are married, or support a family, it will not be necessary for you to make an income tax return unless it amounted to $166.66 a month (that is, $2,000 a year, or over).

You should immediately see the Internal Revenue Expert in your community (ask the postmaster or your banker where his office is) and he will tell you how to make out your income tax returns on the form which he has. He will also tell you what deductions you can make in figuring up your income.

THE ADVANTAGES OF CLAY STORAGE AND THE DESCRIPTION OF A SUCCESSFUL INSTALLATION.

By F. H. Riddle.*

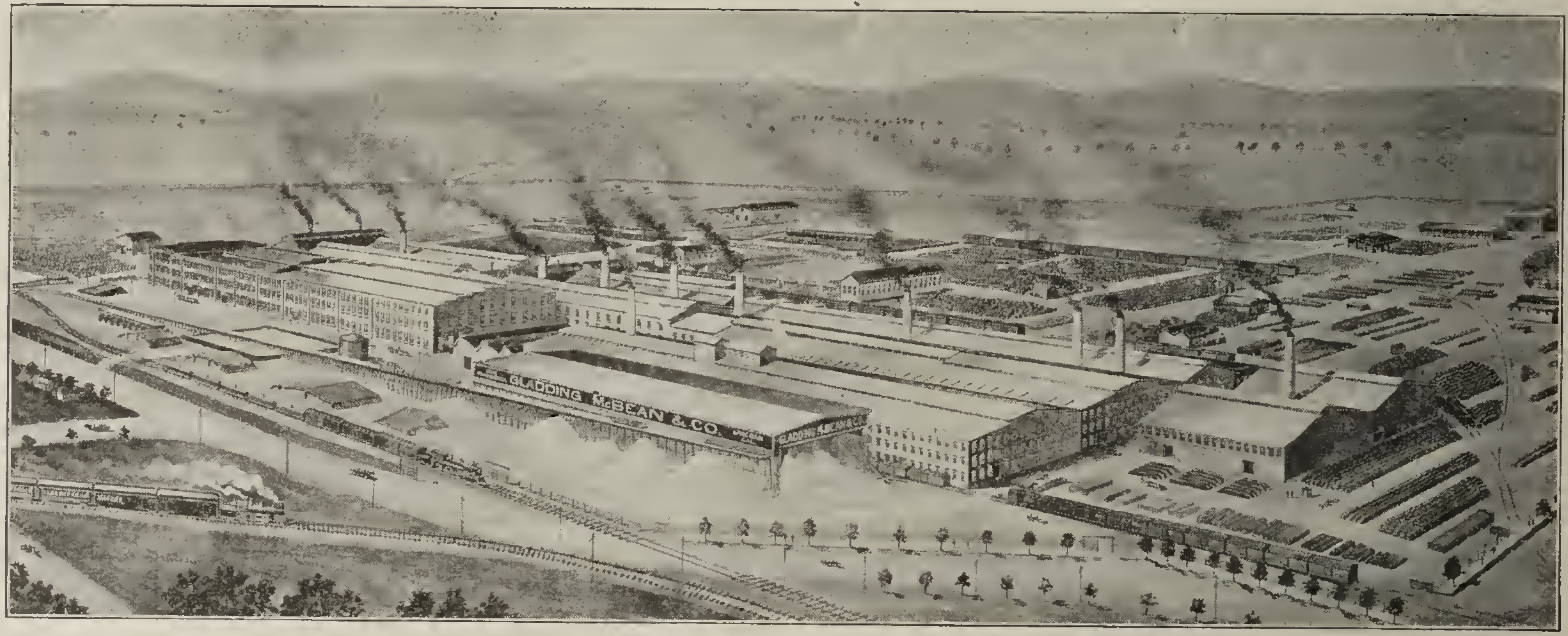

GLADDING McBEAN & CO.

Fig. 1.

THE Advantages of Clay Storage. Is the storage of clay necessary in the manufacturing of heavy clay products? The usual answer to this is: No, not if you can arrange your plant so that you deliver clay directly from the bank to the pans. There is no doubt but that this is true in a great many cases. However, there are many other cases, in the writer's opinion, where the using of the clay direct is not cheaper, when all the results are considered. It may cost a little more per ton to handle the clay, but when the lack of uniformity of the material, the resulting variation in handling, and the burning losses are considered, it is expensive not to store the clay.

No matter what the problems of manufacture are, so long as they are uniform, they can be handled in systematic manner, and the system gradually altered or improved so that better results are obtained. The minute the raw materials cease to run uniform, then the system is upset and trouble begins. Even if the lack of uniformity is known ahead of time, it is necessary to alter methods to meet the condition, and this means a great deal of trouble with the ordinary clay-working plant, and a lot of personal attention. Quite often the man in charge does not understand the cause of the sudden change, or how to correct the trouble, so that considerable money can be lost in a comparatively short time. If there is no warning of the trouble, and, for example, a burner takes down the wicket of a kiln and finds swelled ware, it means that all the ware in several other kilns is in similar condition, and that if he does not act quickly, all the rest of the ware in the kilns and on the floor will be giving him the same trouble. If it is a new kind of trouble which he has no knowledge of from previous experiences, then there are chances for heavy losses. Troubles of this sort are not suppositions in practice; in fact, they are quite common, and in some plants so common that the management is led to believe they are part of the business, and must be expected.

If the clay bank varies from time to time so that certain firing conditions give blown ware, or cored ware, or both at one time, and later the ware is good under the same conditions, there will be a tendency on the part of the operator to find the safe burning method under the worst conditions, and burn accordingly. It is better to do this than to make a saving in the burning at certain times and then suddenly have heavy losses which will immediately counterbalance all the savings made. It is possible, on yards where the operator has the necessary knowledge, to use draw trials and vary the burning conditions to correspond to the clay conditions. This will mean changing the system and worrying about whether the burner or his helpers will remember the directions, etc. How much better it would be to have some means of getting a uniform mixture of clay from the bank so that the same method could always be used, and the systems of operating could gradually be altered so that the losses would eventually be reduced to a minimum.

The possibilities of this mixing of the clays from different parts of the bank depends largely, of course, on the local conditions, daily tonnage, etc. There are, however, a good many clayworkers who would do well to see what the mining engineers and steel and iron operators are doing along these lines, particularly, when it comes to the question of storing and handling enormous tonnages. It is true that most of these operators are warranted in making large investment in plant and equipment on account of the enormous tonnages and high values of their products, but it is also a fact that, particularly in mining, some operators are handling very low grade ores in small quantities and doing it successfully. The usual reason is that they study their conditions thoroughly and equip the plants accordingly, after availing themselves of other peoples' experience.

The writer has several plants in mind where the clay handling has been worked out by modern methods. The two plants, however, where this handling is done the best and cheapest, conditions being considered, are plants where the clay storage and handling equipment have been built after consulting with engineers who have made a study of similar equipments in other lines of manufacture.

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The system which is described below is elaborate, and performs several functions which the ordinary equipment would not be called upon to do, and yet, the investment was warranted.

The storing of clay is not only an advantage from the standpoint of being able to mix clays from different parts of the banks to obtain uniform conditions, but from other standpoints as well. A clay, that weathers with storing, will, as a rule, behave much better in manufacturing, and particularly in grinding. Where a dense product is desired, a material that will grind in such a manner as to form a sufficient amount of fine particles of material to fill the spaces between the larger particles, will give a denser structure than where the same material is ground so that the large spaces are not so well filled with finer particles. Weathering will tend to accomplish this varied sizing in grinding as well as to produce greater plasticity. The writer knows of one factory manufacturing paving block from a No. 3 fire clay where the weathering of the clay reduced the rattler loss two per cent. The extra handling of the weathered clay amounted to considerable, but could have been accomplished with but very little extra cost if the proper equipment had been used. This equipment could have been installed at a cost that would have warranted the investment.

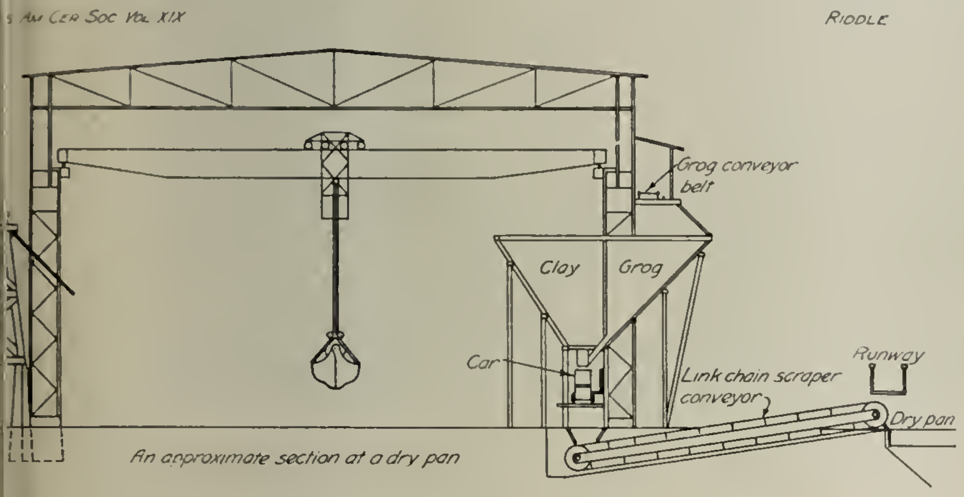


Fig. 2.

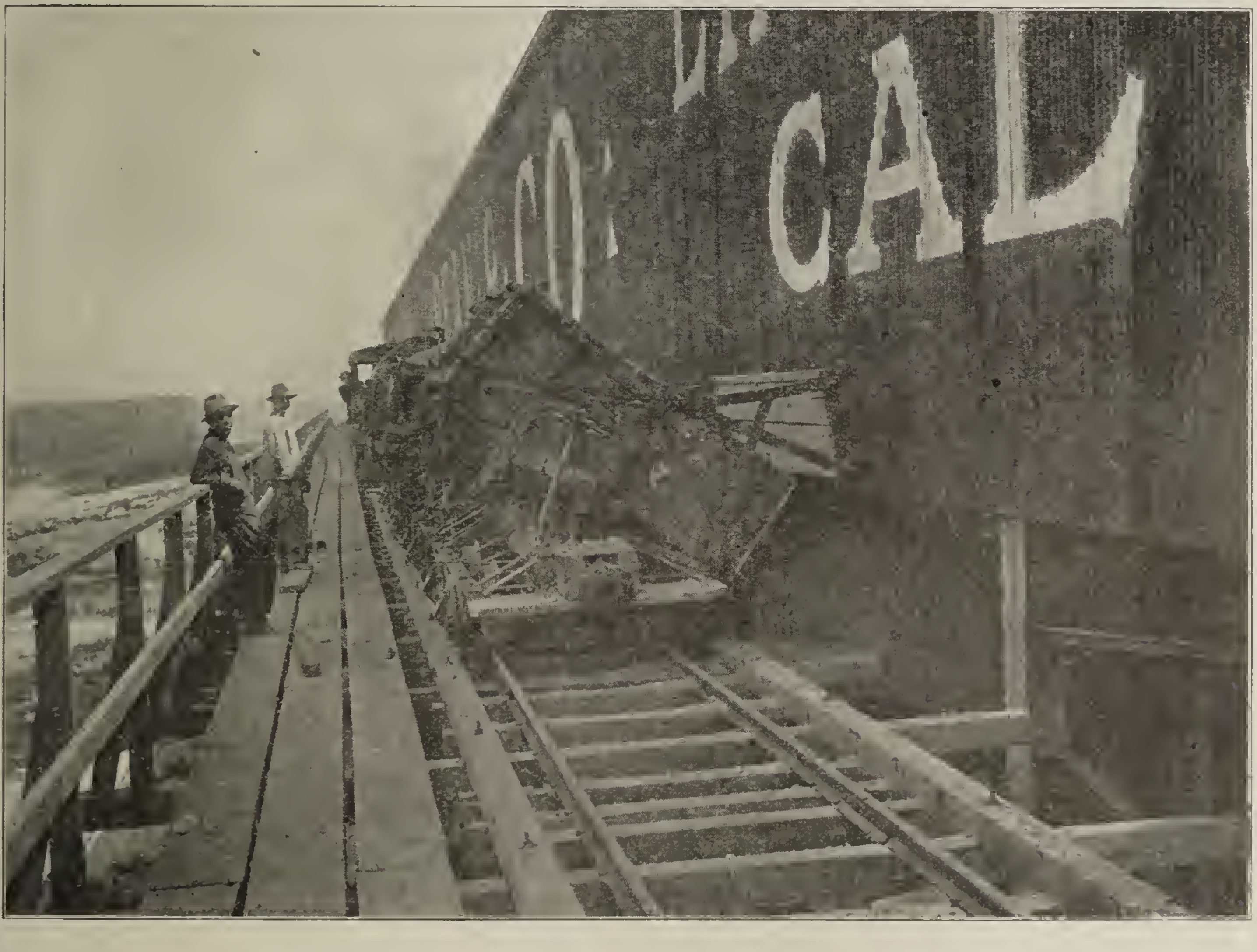


Fig. 3.

Weathering also tends to dissolve and wash out soluble salts in many clays, and thus eliminates ingredients which produce objectionable scumming. This subject has been very thoroughly discussed by others and needs no comment here.

If the shed is built with a view of weathering the clay, and to save labor in handling, it can be built without a roof. The advisability of not using a roof would, of course, depend upon climatic conditions, quality of clay, etc. If it is desired to keep the clay under cover and still weather it more rapidly than the ordinary exposure to air would do, this can be accomplished by the use of steam supply pipes laid along the ground, under the clay. These pipes are distributed as best meets conditions, usually 1 in. to 1½ in. laterals running out at intervals of about 10 to 15 feet from the 2 or 2½ in. feed pipe. The laterals have slits or small holes so spaced that the clay can be warmed from beneath, and the steam gradually work up through it. The steam, of course, is fed into the system at a low pressure. Along certain parts of the Ohio river the clay is weathered both by use of steam from beneath, and natural exposure above. Where both methods are used on the same pile, the weathering and disintegration is much further advanced on the bottom and heart of the pile where the steam has affected it, than on the outside where the weather has affected it.

Description of a Successful Installation.

The accompanying illustrations show a clay storage arrangement which is worthy of note. This arrangement ac-

(Continued on page 64.)

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXI.

Continuous Kiln Stack.

A modern chambered continuous kiln is a series of down draft compartments comparable with a periodic kiln. Each compartment has bags, checkered floor, under floor flues, and the setting is the same as in down draft kilns.

The furnace resistance of a coal fired periodic kiln is eliminated in the continuous kiln.

From the limited data available, it would not be safe to figure on less than 0.3 inch water pressure for each compartment of a continuous kiln during its maximum temperature period.

We will assume capacity of 30,000 brick per day, and a fuel (coal) consumption of 400 pounds per thousand brick, making 12,000 pounds per day, or .139 pounds per second. We will also assume 100 per cent. excess air.

The Hocking Valley coal, per pound, under such conditions, will give us at 32 degrees:

Dry Air	114.3 cubic feet
CO_2	20.6 cubic feet
N	90.3 cubic feet
SO_2	.3 cubic foot
Water Vapor	13.5 cubic feet
	239.0 cubic feet

The total weight of the gas is 19.5 pounds, and the weight per cubic foot is .082 pound, which gives a density of 1.02.

The cubic feet of gas are as follows:

	Total	Per Second
Entering Air	236 cubic feet	32.8 cubic feet
Combustion Gas	239 cubic feet	33.2 cubic feet

We will assume the following temperatures in seven connected chambers, viz., 232, 932, 1632, 2132, 1232, 832, 632, and an average stack temperature of 432. The first three compartments are cooling and serve to heat the air; the fourth compartment is the combustion compartment; the last three are heating up.

Correcting the air and gas for temperature, assuming that the air enters at 62 degrees, we determine the following relative velocities per second:

1.32, 2.64, 3.96, 4.97, 3.25, 2.48, 2.1.

The densities will be:

0.75, 0.32, 0.25, 0.2, 0.3, 0.4, 0.48.

The relative resistance is as the velocities squared times the densities, and in this way we get the following results: 1.31, 2.58, 3.92, 4.94, 3.17, 2.46, 2.12.

The total relative resistance is the sum of the above and is 20.5.

The combustion compartment has a relative resistance of 4.94 and the actual resistance assumed is 0.3.

The total kiln resistance will be in the proportion of

$$\frac{4.94}{.3} = \frac{20.5}{x}$$

x = 1,245 inch water pressure = 80.3 feet of air.

The volume of gas per second at 32 degrees is 33.2 cubic feet, which at the stack temperature becomes 59.76 cubic feet.

If we assume a stack diameter of 4 feet, the velocity in the stack will be 4.8 feet per second.

The total stack intensity will be:

$$\frac{.076 - 0.455}{.076} H = .4 H$$

The velocity head will be:

$$\frac{4.8^2 \times .6}{64.3} = .215$$

The friction head is:

$$\frac{.0215}{4} H = .0054 H$$

We get the equation:

$$.4 H = 80.3 + .215 + .0054 H,$$

From which:

$H = 204$ feet.

In order to build a stable stack for such heights the diameter must be large which reduces the velocity and friction heads to a negligible factor, and we may determine the height from the total intensity and the required pressure which in the above example would give 201 feet for the height of the stack.

We have figured on seven compartments, which is a practical minimum often exceeded, and for a greater number of compartments we must increase the height of the stack.

The modern compartment continuous kiln is complicated compared with earlier types of kilns, and the resistance is correspondingly greater, which explains why we have resorted to induced draft. The earlier kilns had solid floors, no checker work, no under floor flues, and the compartments were connected by relatively large direct openings. The ware was set with flues, longitudinal in the lower part of the kiln, and vertical feed holes at short intervals throughout the mass of ware.

Tunnel kilns of the Hoffman type have solid floors, and no division walls, and flues are set in the ware. The resistance in such a kiln would be less although the gases are pulled through a longer distance. The latter type of kiln may be likened to a long, tortuous, exceedingly rough flue. If we figured on the basis of equivalent 0.2 resistance per compartment in a tunnel kiln, the stack would be 136 feet high. A resistance of 0.25 per compartment would require a stack 158 feet high.

Stacks for the earlier types of compartment kilns and the tunnel kilns vary from 125 feet to 190 feet in height. In the earlier types of compartment kilns the stack was frequently included within the kiln walls and its base was kept hot by conduction from the adjacent compartments. In both types the main draft flue was above the ground in the longitudinal center of the kiln, with the compartments or tunnels on either side, and thus the stack gases averaged a higher temperature than that entering the main draft flue, which increased the draft intensity. In spite of these aids, we frequently found it necessary with stacks of minimum height to open a damper into the first compartment ahead of the combustion compartment in order to strengthen the draft by increasing the temperature of the stack gases.

The discussion brings up a point worthy of mention. In modern kilns we by-pass the air for water smoking, the purpose of which is to insure the water smoking keeping pace with the burning, to reduce the scumming difficulty, to overcome the swelling peculiar to a continuous kiln product. The hot air is taken from a cooling compartment and conducted through a flue direct to the compartments ahead.

The air leaving the cooling compartment has an excessive force and the flue offers little resistance. The total resistance in this circuit may be the resistance of a single compartment, or two compartments, or three, depending upon whether they are connected to the main draft flue singly or in series. The temperature in these compartments is relatively low, and the resistance less in consequence.

These low resistance compartments are connected with a stack or fan adapted to overcome the resistance through a longer series of higher temperature compartments.

The effect is to weaken the draft intensity, in consequence of the reduced stack temperature, and because of the increased volume, although this is a small matter if the stack area is amply large.

The proper adjustment is obtained by introducing damper resistance, but this is uncertain at best.

The control of two distinct and widely differing operations with a single equipment emphasizes the importance of greater flexibility, which a fan gives, and it is but a step to the use of two fans, one for each operation.

We have not attempted to go into the details of the problem. For instance, the clay will contain 5 to 10 per cent. of combined water and 3 per cent. or more of hygroscopic water, which as vapor in the gas will lower the density, and lessen the height of stack required. On the other hand, carbon or sulphur in the clay would increase the density of the gas, unless they were included in the combustibles and provided for, otherwise they would convert excess air into heavier carbon and sulphur dioxides.

Construction of Stacks.

The bearing weight of soil, clay, gravel, etc., are usually taken as follows:

One ton per square foot for soft wet soil.

Two tons per square foot for firm, wet soil and sand.

Three tons per square foot for firm, dry soil, clay or fine sand.

Four tons per square foot for dry, hard, coarse sand, clay or gravel.

This leaves a wide margin for the exercise of one's judgment, and the rule should be to err on the safe side.

Hotop's formulas for the depth and size of stack foundations and foundation base plates are as follows:

Depth of foundation, one-eighth of the height of the stack above ground.

Breadth of foundation, one-eighth of the total height of stack.

Thickness of foundation plate (below the flue entrance), $1.64 + .01\,H$.

A 60 foot stack, by these rules, would have a depth below ground of 7.5 feet. The breadth would be 8.4 feet, and the thickness of the base plate 2.24 feet.

A better method is to estimate the weight of the stack and determine the foundation dimensions from this data.

A sixty-foot stack with a 4½-inch lining and outside walls 13 inches, 9 inches and 4½ inches thick in sections each 20 feet high and a foundation depth of 7 feet will weigh 70 tons.

The maximum breadth of the base for soft, wet soil will be 8.2 feet. On the basis of 2 tons per square foot, the required breadth of the foundation is 5.8 feet, but if the stack has a 30 inch flue the side at the base will be 6 feet 5 inches, and with proper set-off at the bottom, together with a proper slope or steps in the base, we will get the maximum breadth. The angle of the slope should not be less than 30 degrees from the vertical.

Concrete should not be used in the stack foundation above the bottom of the kiln draft flue, nor, indeed, nearer than 12 inches to the bottom of the flue, on account of the high temperatures which develop in the stack. If the ground is soft and wet, it is desirable to carry the foundation deeper in order to use a monolithic concrete base plate, but as a rule, if the ground is suitable for kilns which have underground flues to a depth of from 4 to 8 feet, the stack foundation will be on hard, dry soil or gravel and there is little need of a massive base plate. The foundation above the base plate should be built of hard burned brick laid in cement mortar.

Every kiln stack should have an independent fire brick inwall. We have stack temperatures exceeding 1,000 degrees, and if the wall is single the expansion inside lifts the outer brick from their bed, and once loosened, they are easily separated laterally, developing zig-zag cracks from top to bottom.

The fire brick inwall need not be over 4½ inches thick unless the stack is very high, and the brick should be laid in a thin bed of fire clay mortar in the lower part of the stack and adding some cement to the clay mortar for the upper part.

The end joints may be heavier, in fact, they should be, to provide locally for the expansion of each brick.

The top of the inwall should be several inches below the top of the outer wall, so that the expansion will not lift any protective cover placed on the outer wall.

The outer wall at the base should be set back about 6 inches from the inwall and be carried up with a batter inside and out until the inside is approximately 2 inches from the inwall, then drop off one brick in the thickness of the wall without breaking the continuity of the batter of the outside face and carry this wall to the proper height to drop off another brick in the thickness.

The height of each section should be about 25 feet and not exceeding 30 feet. A 50 foot stack may start with a 9 inch wall, dropping off to a 4½ inch, and similarly a 60 foot wall, but the latter preferably should have three sections, 13 inches, 9 inches, and 4½ inches thickness of wall respectively. Stacks exceeding 75 feet in height should have no section less than a 9 inch wall, not considering the fire brick inwall.

The outside wall should be laid in cement or lime-cement mortar. An excellent lime mortar for kiln work is made of lime and ground furnace clinkers instead of sand. The clinkers are much sharper than sand and have some hydraulic property.

(To Be Continued.)

WORK OF SEWER PIPE MANUFACTURERS' ASSOCIATION INCREASING IN IMPORTANCE.

UNDETERRED by the disturbing conditions due to war, the Sewer Pipe Manufacturers' Association has concluded the busiest year of its history from the standpoint of association activities, and is pressing forward to still larger efforts in 1918. Between the problems of trade promotion, of car supply and war service, Field Commissioner John L. Rice is a decidedly busy man, and this activity is shared by his aides.

The great and growing popularity of vitrified clay pipe and allied clay products is looked upon as a justification of past association efforts and sufficient reason for continuing and expanding its policies. At a time when deliveries are difficult through car shortage and when questions of finance cast some doubt upon the amount of construction work to be done in the near future, it requires a certain element of faith to do this. But faith is not lacking. The members are mindful of the text about "casting their bread upon the waters." They know that the war is going to be won and that present measures toward trade promotion will count heavily in producing a favorable market in the inevitable reawakening of peaceful pursuits.

There is a further element of patriotism in this policy. It takes money to fight the war. Wealth depends on business, and the sewer pipe manufacturers propose to keep the flag of business flying when necessity is greatest. The tremendous demand for metal with which to fight the war has resulted in a request from the War Department that non-metallic substances be used in building construction wherever possible. This has promoted a wider use of vitrified clay pipe and gained for it a place in the public esteem from which no form of competition can dislodge it.

The activities of the Association staff have been divided, generally speaking, into sales promotion, publicity and technical counsel. Commissioner Rice is a strong believer in the efficacy of personal contact, and tarries very few days of the month at the Akron headquarters. During the past year he and his assistants have canvassed the whole of lower Michigan, New York and West Virginia, and are now engaged in a canvass of Virginia. Portions of Ohio and Indiana have also been visited.

The method of these canvassers is to approach every man in a community who, in either public or private capacity, is likely to influence the use of sewerage or drainage materials. The building supply man is seen. Such a visit is doubly effectual because the canvasser has nothing to sell, no rivals to criticise and no prices to quote. His cue is to enthuse the dealer over the merits of vitrified pipe, to show him how he can induce contractors and patrons to prefer it, and can be on guard against discriminatory legislation. He is given all the trade literature that he can use and coached in the method of using it. By rousing his imagination with the prospect of increased sales, the supply man is frequently converted from a mere storekeeper into a merchant, or from a merchant into a trade apostle.

State, county and city authorities are systematically canvassed. City engineers are interested in municipal sewerage, and building inspectors and plumbing inspectors look upon clay products, including fire clay flue lining and vitrified clay pipe, from the standpoint of safety and sanitation. Much of this year's effort has gone into acquainting these officials with the merits of the poured joint. As rapidly as possible the old practice of the hand-troweled joint is being eradicated as wasteful of materials and frequently far from impervious. The density of material needed for a tight joint is most certainly secured when gravity does the work of filling the pipe bell. Commissioner Rice says that this development is one of the most important in the history of sewer pipe practice; that it has been welcomed wherever broached, and has dispelled any prejudice against the pipe that really should have been directed against faulty joint practice.

County authorities and other highway officials are interviewed as to highway drainage and culverts. In the highway field a truly wonderful prospect is unfolding as the need of more adequate drainage for roads is universally felt. Advocates of every form of road surface unite in demanding a dry sub-bed as a condition to the success of their materials. The superiority of closed side drainage over the open ditch is being felt, not merely as a matter of sanitation, but freedom from accident and better appearance. Massachusetts is quite definitely embarked on a policy of eliminating side ditches in favor of vitrified drainage, and the highway authorities of a majority of states are openly favoring the same step for the principal thoroughfares.

The Ohio Commission's specification of a vitrified pipe culvert barrel with concrete encasement has been introduced throughout the states canvassed and elicited promises of adoption.

Enclosed drainage is also winning favor as a substitute for county ditches. In Michigan, where each county has a drain commissioner, with no duties aside from drainage, there is a distinct movement in this direction.

Commissioner Rice has represented his association at a variety of trade and professional gatherings, including the National Association of Master Plumbers' convention at Evansville, Ind., and the convention of the American Association of State Highway Officials at Richmond, Va. At the Real Estate and Building Show, in Columbus, January 21-30, he was in charge of a display of clay products which surpassed any of his previous efforts, and was assisted by W. W. Dixon, of the Atlas Company, who is promoting G-K Compound; DeWitt H. Wyatt, of Columbus, inventor of the Flex Form joint mold, that works alike with bituminous compounds and with Portland cement grout, and L. A. Weston, patentee of the Weston Gasket and Form for Clay Pipe.

The Sewer Pipe Association has also been represented in the Emergency Highway Bureau, an organization of men whose business makes them especially familiar with highway problems. Their task is to work with government authorities in promoting the improvement of main highways, particularly the connecting links, so that the railroads will be relieved of a considerable volume of short-haul freight, which can as well be handled by truck.

There has been a similar co-operation by Commissioner Rice with the agricultural interests, to promote larger war crops through farm drainage.

The association has interceded in several states and a number of cities to thwart unfavorable legislation, and has offered expert sanitary counsel to municipalities that are drafting codes.

The former chief engineer of the association, R. S. Durrell, has been called to service with the army engineers, and his place has been filled by Engineer E. R. Walcott. A variety of technical correspondence is kept up in response to queries, beside the wide distribution of technical instruction through booklets.

The advertising activities have been placed in charge of

Henry P. Boynton, of Cleveland, and a campaign carried on in nine mediums. One of the latest and most promising ventures in the field of publicity is a campaign to interest the rural resident in the installation of such sanitary appliances as are found in modern city homes. This involves the construction of private sewers and septic tanks for sewage treatment. Methods of construction adapted to the owner's own spare time efforts are treated in pamphlets, and instruction in meeting particular problems is given by mail.

Direct methods of advertising have been relied upon equally with trade organs. Thousands of booklets and folders are issued monthly, both to lists in possession of the association and through the private mail of members and building supply merchants.

While the Sewer Pipe Manufacturers' Association is relatively new among trade organizations, it has developed along the lines of sound policy and its influence is increasingly f from day to day. Its strength, in the final analysis, is the strength of the men composing its membership and the responsible committees through which its policies are determined.

The companies constituting its membership are:
American Sewer Pipe Co., Akron, Ohio.
Buckeye Sewer Pipe Co., Akron, Ohio.
Buckeye Fire Clay Co., Uhrichsville, Ohio.
Crouse Clay Products Co., Akron, Ohio.
Cambria Clay Products Co., Blackfork, Ohio.
Clearfield Sewer Pipe Co., Clearfield, Pa.
Dennison Sewer Pipe Co., Dennison, Ohio.
Evans Clay Manufacturing Co., Uhrichsville, Ohio.
East Ohio Sewer Pipe Co., Irondale, Ohio.
Junction City Sewer Pipe Co., Junction City, Colo.
Kaul Clay Co., Toronto, Ohio.
Logan Clay Product Co., Logan, Ohio.
Patton Clay Manufacturing Co., Patton, Pa.
Pennsylvania Clay Products Co., West Windfield, Pa.
Robinson Clay Product Co., Akron, Ohio.
Robinson & Sons Sewer Pipe Co., Uhrichsville, Ohio.
St. Marys Sewer Pipe Co., St. Marys, Pa.
Union Clay Manufacturing Co., Empire, Ohio.
Portland Stone Ware Co., Boston, Mass.
Peerless Clay Manufacturing Co., Port Homer, Ohio.

Written for The Clay-Worker.

NEW YORK AND VICINITY.

Up to the advent of the extreme cold weather the first of the year, barges came down the river loaded with common brick, even though they are considered, in a way, nonessential, and some difficulty was experienced in getting power to move them. But where the firms own their tugs and barges they control their shipments and are able to proceed with their regular business regardless of the fact that shipping is one of the most difficult of activities at present.

Hudson river yards are charging around $8.00 at the yard and $12.00 on the job, but few jobs are in progress and all the brick that came down during December went to the storage yards. Movement is much restricted in the city and building is very small at the time. Little prospect of improvement until after the present disturbing conditions are passed, or some end is seen, is now visible.

They believe they have ample supplies to care for the early orders next spring and hope by the time these are exhausted that the yards will have enough made to keep orders filled. They do not anticipate large orders, and unless something takes place this winter to change the world conflict, New York will see very little development this year. Investors are not anxious and builders seem to be certain of lack of activity, while architects are receiving few inquiries.

BURTON.

Written for The Clay-Worker.

HEARD IN NEW ENGLAND.

CONDITIONS through the six states are about the same as they have been. Brick manufacturers are uncertain about the future and are preparing for a long shutdown in case the business situation doesn't clear before it is time to open in the spring. While business buildings are wanted and houses are needed, few investors are ready to risk their money in putting up anything in either line for the present. The market for brick is down to a very low ebb, and though the outlook for all sorts of business development was never better, capitalists are too unsettled to undertake anything outside of what they must.

New England, as a whole, was never more active than it is at present, but a great many are under the impression that it is merely a temporary or sporadic activity, which will pass with the activity incident to the war. Conservative men are unsettled in their views regarding the future, and it seems probable from what can be seen now that unless the situation clears more than may be expected under present circumstances, activity will be small this season. Manufacturing costs have increased, labor is scarce and sale is obstructed by a score of retarding influences which will tend to keep men as conservative as they are now.

No one in the six states is discouraged, but all are cautious and seem likely to remain that way until something happens to put things in a better position. The output last season was reduced because of the difficulty of getting workmen, and nothing now in sight indicates any improvement in the season to come.

HIRAM.

GUY E. TRIPP MADE ORDNANCE EXECUTIVE.

Guy E. Tripp, of New York, heretofore chairman of the Westinghouse Electric and Manufacturing Company, has been appointed by the War Department as chief of the Production Division of the Ordnance Department, with a commission as colonel, intrusted with the task of supervising and stimulating the production of all ordnance supplies. The appointment of Colonel Tripp is one of the important steps in the reorganization of the Ordnance Bureau, announced recently by its chief, General Crozier.

Colonel Tripp was selected because of his experience in the manufacture of munitions of all kinds, the Westinghouse Company having obtained large contracts from the British and Russian Governments immediately on the outbreak of the European war. Colonel Tripp is credited with bringing to the department the highest obtainable type of experience and ability to insure speedy and careful production of munitions. The board of directors of the Westinghouse Company has given him a leave of absence for the duration of the war.

THE BETTER HOMES SHOWS.

Louis W. Buckley, who managed the Grand Rapids Better Homes Show, was so encouraged by the successful outcome of that undertaking that he is planning for a similar exposition more national in character to be held in the Grand Central Palace, New York City, from May 18 to May 25, inclusive. The commercial exhibits will include displays of materials used in home construction, furniture, carpets, rugs and all the many things which go to make for home building and improving. Those interested in the matter and desiring to make exhibits or to obtain further specific information may address Louis W. Buckley at Grand Central Palace, New York City.

INCREASING DEMAND FOR CLAY PRODUCTS

What the Various Branches of the Clay Industry Are Doing to Bring Before the Attention of the Public the Value and Need of Their Ware.

WE have discussed at considerable length from various angles the direct benefits which may be had from exploiting clay products, that is, benefits in the way of enlarging the demand and increasing the trade. So, while there is still plenty more to say on this matter, it may perhaps be well to turn aside for a moment and consider another phase of the subject, those secondary, subjective or indirect benefits which the industry itself derives through getting together in a campaign of exploitation. Widespread exploitation of product serves to arouse a better understanding between manufacturers of the product, and also more pride in being engaged in its manufacture.

Through this means the trade benefits by higher ideals, by better understanding of the advantages which come from a closer walk one with the other and more cooperation for the general good. In the end an industry which wages a big, broad campaign of exploitation of its product at the same time improves its own morale and begets higher ideals as well as better standards of manufacture, and through this means derives a benefit which, though secondary, is often comparable with the direct benefit which may be obtained through enlarged trade.

We have long since listed the Standard Brick Manufacturing Co., of Evansville, Ind., as pacesetters in the brick boosting and advertising game, and usually just about the time we get to thinking they have done everything that can be done to boost brick, they spring something new.

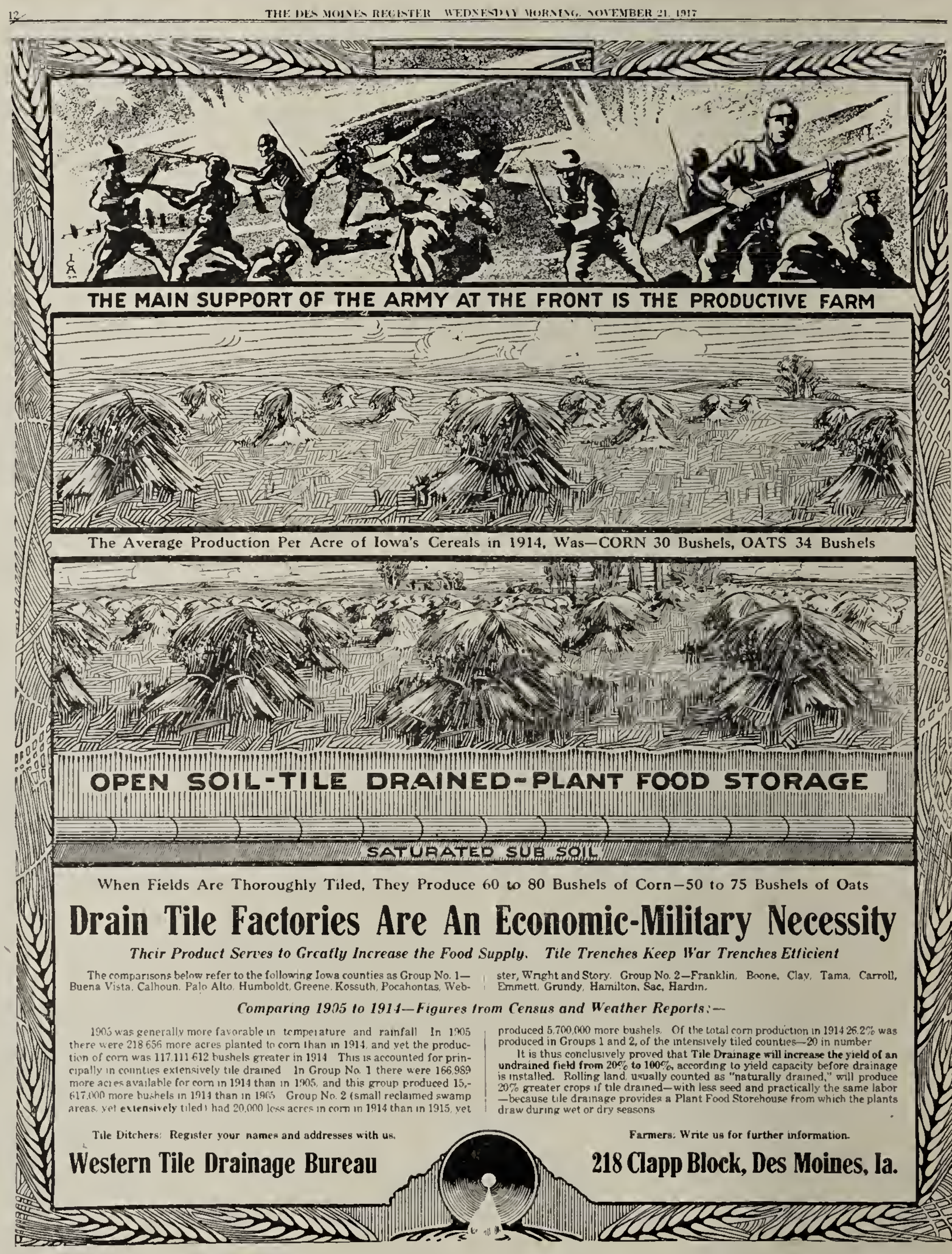
This time it has to do with the basket ball teams of the Y. M. C. A. at that place. Various business institutions of the town have taken an interest in outfitting and furnishing names for the Y. M. C. A. basket ball teams. One of the teams for the season is equipped with nice red suits on which in white letters is the slogan, Build With Brick. It is named and scheduled as the Build With Brick team.

There is no need to tell you who furnished the suits or conceived the idea of this bit of up-to-the-minute advertising. The Y. M. C. A. basket ball games are made quite a feature of in the local paper, schedules are published each week with comments upon the game. Also there is quite an attendance of the citizens of Evansville at these games, so it naturally follows that the Build With Brick slogan gets some attention and is the subject of comment and interest.

There is no need to say, either, that this is good advertising, for this fact is self-evident. The one thing we are impressed with right now is that if all the other brick men in all parts of the country would keep as active and up to the minute in boosting brick in this way there would be a lot more brick building and much more prosperity in the brick business.

A number of the brick manufacturers in various parts of this country are doing effective work in promoting the sales of their products in their territory. Last month we published two very forceful advertisements used by the Standard Brick Co., of Macon, Ga. These pictured towering brick chimneys and walls, skeletons remaining to remind the world that here formerly was located an inhabited section. "Standing solidly around the ruins of buildings that fell before the fire fiend are an ever present suggestion of the safety and satisfaction given by brick in home and business block buildings." These advertisements have proven a splendid investment for the Standard Brick Co. and have awakened the people in that section to the need of building with brick. This is only a part of this firm's efforts along this line. They issue clever blotters and letters which have strong pulling powers.

Many sewer pipe concerns are doing excellent work in spreading before the eyes of the country the need of proper



12 THE DES MOINES REGISTER WEDNESDAY MORNING, NOVEMBER 21, 1917

THE MAIN SUPPORT OF THE ARMY AT THE FRONT IS THE PRODUCTIVE FARM

The Average Production Per Acre of Iowa's Cereals in 1914, Was—CORN 30 Bushels, OATS 34 Bushels

OPEN SOIL-TILE DRAINED-PLANT FOOD STORAGE

SATURATED SUB SOIL

When Fields Are Thoroughly Tiled, They Produce 60 to 80 Bushels of Corn—50 to 75 Bushels of Oats

Drain Tile Factories Are An Economic-Military Necessity

Their Product Serves to Greatly Increase the Food Supply. Tile Trenches Keep War Trenches Efficient

The comparisons below refer to the following Iowa counties as Group No. 1—Buena Vista, Calhoun, Palo Alto, Humboldt, Greene, Kossuth, Pocahontas, Webster, Wright and Story. Group No. 2—Franklin, Boone, Clay, Tama, Carroll, Emmett, Grundy, Hamilton, Sac, Hardin.

Comparing 1905 to 1914—Figures from Census and Weather Reports:—

1905 was generally more favorable in temperature and rainfall In 1905 there were 218 656 more acres planted to corn than in 1914, and yet the production of corn was 117,111 612 bushels greater in 1914 This is accounted for principally in counties extensively tile drained In Group No. 1 there were 166,989 more acres available for corn in 1914 than in 1905, and this group produced 15,617,000 more bushels in 1914 than in 1905 Group No. 2 (small reclaimed swamp areas, yet extensively tiled) had 20,000 less acres in corn in 1914 than in 1915, yet produced 5,700,000 more bushels. Of the total corn production in 1914 26.2% was produced in Groups 1 and 2, of the intensively tiled counties—20 in number

It is thus conclusively proved that **Tile Drainage will increase the yield of an undrained field from 20% to 100%**, according to yield capacity before drainage is installed. Rolling land, usually counted as "naturally drained," will produce 20% greater crops if tile drained—with less seed and practically the same labor—because tile drainage provides a Plant Food Storehouse from which the plants draw during wet or dry seasons

Tile Ditchers: Register your names and addresses with us.

Farmers: Write us for further information.

Western Tile Drainage Bureau

218 Clapp Block, Des Moines, Ia.

Miniature of a Full Page Advertisement That Appeared in the Des Moines Register.

sanitation and the advantages of sewer pipe in this connection. They also are bringing before the public the absolute necessity of protection from fire by clay flue lining, etc.

The roofing tile manufacturers have not been very active as a whole in condemning the wooden shingle and other combustible and faulty roofing materials, still several firms are doing excellent work in this particular. Greater efforts along this line are needed to educate the public to tile their roofs with fireproof materials. A golden opportunity is being neglected.

The refractory people are up-to-date and strongly in the game. Many of the larger firms are doing considerable work to show the superiority of fire clay products. The same is true in the hollow ware industry.

The paving brick interests are well taken care of by several organizations that have increased greatly the mileage of brick-paved highways and country roads through effective advertising and promotion work.

The drain tile manufacturers have been giving considerable attention to this work only in a few sections of the country. There have been some very effective articles in the farm papers which have tended to awaken the farmers to a realization of the need of underdrainage. But much greater effort along this line is necessary. At this time we wish to refer to the advertising campaign of The Western Tile Drainage Bureau, of which Mr. C. B. Platt, of Des Moines, is secretary. Iowa is the great drain tile state, it manufactures and disposes of more drain tile than any other state in the Union. The Iowa association is backed by many large manufacturers who realize the benefits of publicity work and are willing to spend thousands of dollars to put the facts before the farmers. A fund of $20,000 is being raised among the drain tile manufacturers in Iowa to carry on their work in that state. A short time ago a full page advertisement was used in the Des Moines Register, a miniature of which we are pleased to publish herewith. The drain tile manufacturers of that state realize the great need of increasing the demand. The coal and car shortage has had a bad effect, but the car shortage problem has been the most troublesome. Ware has piled up in the yards until there is an over-supply of stock and an increased demand must therefore be created to take care of this supply and the large tonnage that will be made when the coal situation improves. Supply and demand effect prices and there is a full realization that if the supply greatly exceeds the demand the prices on tile will naturally be lowered and the profit taken out of the business.

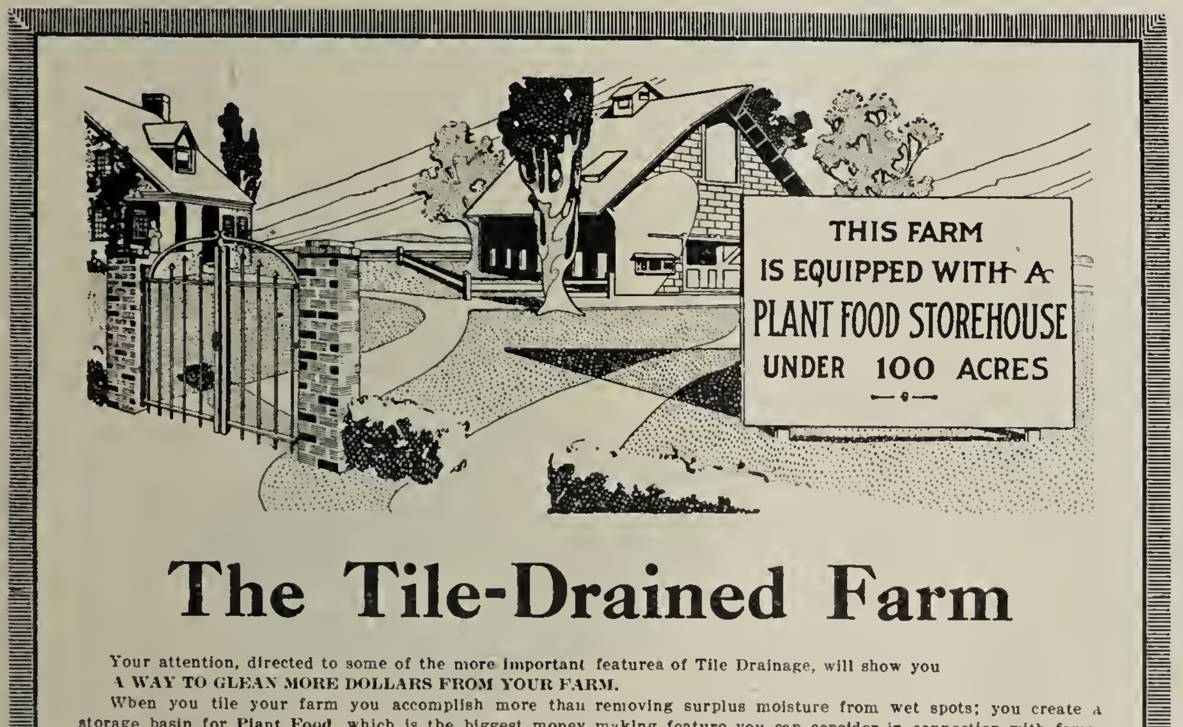
Publicity work is effective in creating a demand and eliminating the cut price evil. It is up to the various manufacturing interests, therefore, to protect their business through educational campaigns and a closer co-operation in all matters entering into the business of manufacturing and selling.

STUDY AND ACTION.

Somebody has raised this question in connection with government regulation and control: Do we have too much detailed study and not enough action? It is a question that can not only be argued in connection with some of our government work, but it is logically applicable to the clayworking industry. There is no question but what we have had a wonderful lot of detailed study, especially as to the technology of manufacturing. Neither is there any question but what the industry as a whole and many individuals have profited from it. The question is, How much more might the trade profit from a greater percentage of action?

Knowledge without action is of very little practical use in the world. Naturally, therefore, the right ideal is to maintain a proper balance or percentage of study for knowledge and action upon the knowledge gained. So there is room for interesting discussion on the question of whether we have too much study and not enough action, both in the matter of technology of manufacturing and in the matter of ideas for sales and boosting brick and clay products in the building world.

Plainly it takes action to get results, and sometimes it really looks as if we are doing too much studying and not enough acting.


THIS FARM
IS EQUIPPED WITH A
PLANT FOOD STOREHOUSE
UNDER 100 ACRES

The Tile-Drained Farm

Your attention, directed to some of the more important features of Tile Drainage, will show you
A WAY TO GLEAN MORE DOLLARS FROM YOUR FARM.

When you tile your farm you accomplish more than removing surplus moisture from wet spots; you create a storage basin for Plant Food, which is the biggest money making feature you can consider in connection with farming.

Insurance Against Drought, As Well as the Wet Season

The deeper this storage basin the greater the supply of plant food and the greater the progressive growth of crop plants during drought periods. Hot and dry weather is not necessarily injurious to crop plants. If they have food they will grow and produce crops under otherwise unfavorable weather conditions. You can't imagine a soil which will of itself supply food for crop plants, because the soil itself cannot supply food to the plant direct. The elements of plant food contained in the soil must first pass into solution in water before they become available as plant food, and this water, carrying essential elements in solution, must be held by the soil in such a way that the hair like root tentacles may reach and absorb it. The soil is divided into minute particles, much smaller than a pinpoint. Water passing through these particles sticks to them in the form of a thin film of moisture. As the water passes through the soil into a tile drain, air follows it and holds the soil particles apart and we have created, under tile drained tracts, a plant food store house.

Now in case the farm tract, be it rolling or flat, is not tile drained, the free water remains in the soil long enough to take in solution much of the essential food elements contained in the soil and to exclude the air and cause the soil particles to pack. Then follows active evaporation by what is known as capillary attraction, which is always much in evidence in dense packed soils from which air is largely excluded. This process robs the soil of plant food and leaves it in a hard, baked condition, which prevents the penetration of the tender root tentacles, and as a result the plant suffers from a lack of food in a very few days following a rain, and if dry weather continues the plant dies or has not sufficient nourishment to produce grain. This explains why wet lands tiled out are better than rolling tracts undrained. It is because of the plant food storage basin provided in the tiled lands and not because the formerly wet tracts are richer than the rolling tracts which have remained untiled because they are considered drained naturally. The benefits of tile drainage are just as readily obtained in rolling tracts as in flat tracts, only that in many cases the flat tracts can not be used at all until tile drained. For this last reason only is there any reason why any one acre should be considered as needing drainage any more than any other acre on the farm.

It is true that if your farm is thoroughly tile drained you will need larger cribs and granaries and that more labor will be required to gather the larger crops. You will also have to provide for the cost of drainage. Here is what you will profit:

A thoroughly tiled farm will average as a minimum 20 per cent greater crop returns than naturally drained farms. This means that you will have in effect the same thing as one-fifth more land, without making the necessary large investment to buy; without paying taxes on the additional acreage and without having to expend the labor to plow and cultivate the extra acres or the money to buy the extra seed.

Call at our office when in Des Moines or write us at any time regarding drainage questions confronting you.

WESTERN TILE DRAINAGE BUREAU
218 Clapp Block, Des Moines, Iowa

Advertisements of this Type Fill a Long-felt Want.

Written for The Clay-Worker.

WELL MADE CLAY BRICKS INVALUABLE FOR BUILDINGS, SAYS BUREAU OF STANDARDS.

A STATEMENT just issued by the Bureau of Standards, at Washington, says that the strength of well-burned clay bricks, their durability, fireproof quality, ease with which they are laid up into walls and other decorative qualities render them an exceedingly valuable building material. Other structural materials made from clay, such as terra cotta, roofing tiles, floor tile and wall tiles, contribute toward the attractiveness and individuality of the home or other building.

The statement continues: Bricks are made from clays or pulverized shale by three principal methods. They may be made by pressing the soft clay by hand into wooden molds or by means of a machine closely imitating this procedure. This process is called the soft-clay method because the clay thus molded contains a large percentage of water. The bricks so made are very porous and often can not be made dense even by hard burning. This, however, does not detract from their durability, as is evidenced by the remarkable resistance to weather in medieval structures that have stood the storms for thousands of years.

The second process of brickmaking consists in forcing the clay in a stiff consistency through the die or opening of a machine. By means of wires stretched between a frame this column is cut into bricks. This is the stiff clay process and is especially used in the case of front bricks, since it can be made to produce a rough texture and removes the uniform, machine-made appearance which they would otherwise possess.

The third process of making bricks consists in grinding the raw material to a moist powder and shaping it into the desired form by means of powerful presses. This method is called the dry-press process. It results in perfectly shaped and finished bricks, which are compact and dense. In spite of their density they remain quite porous unless burned hard, owing to the fact that the structure consists of the separate clay grains, compacted simply by pressure, but still leaving innumerable small pores between the grains.

The quality of building bricks must be considered from several standpoints. It must be kept in mind that the requirements are necessarily more severe in the case of front bricks than for the cheaper kind used for backing up in the wall. For the latter purpose comparatively soft and porous bricks, which would not be suitable for exposure to the weather, may be used.

The question of the weather and frost resistance of facing bricks is obviously the most important one. The water absorption likewise may be used as a rough criterion of the quality of the bricks.

The mechanical strength of bricks can, of course, be determined directly in the laboratory by means of the crushing and transverse tests, but this does not concern the average home builder. It might be said that no bricks, even those used for backing up, should possess a crushing strength below 2,000 pounds per square inch, not because this resistance is actually needed, but because the strength is indicative of the desired quality. Well burned bricks require as high pressure as 25,000 pounds per square inch to crush them.

For the paving of driveways hard vitrified bricks should be employed, laid on a concrete foundation and well grouted with cement mortar. For foundation walls as hard bricks as can be secured should be used, even though their cost is somewhat higher than that of the ordinary run of kiln product. This will assure not only resistance to the destructive effects of the earth, but will also prevent the rise of moisture from the ground to the walls of the house. The practice of using soft-burned bricks for chimneys is also very objectionable, as it has been found that the fire gases exert a very destructive action upon underfired material. Well burned bricks should be used for this purpose.

The color of bricks may vary from pale to dark red and black, or from a cream color to buff and brown. The kind of clay used natually governs the color obtained, though even with the same clay different colors may be obtained. Thus, most red-burning materials will give a dark red when well burned and black when burned very hard. Uniformity in color is no longer desired in front bricks, but within certain limits variation is demanded to give a lively appearance to the walls, especially where rough textures are employed.

The use of hollow tiles for walls, either alone or in combination with a brick veneer, is growing rapidly in the favor of the building public. These tiles are being used both for bearing and non-bearing walls. In the case of the latter, represented principally by partition walls, hollow bricks also are employed. For the former purpose none but hard-burned tile can be considered, while soft material is well suited for partitions.

OBITUARY.

T. B. McAvoy, One of Philadelphia's Pioneer Brickmakers, Meets the Final Summons.

Thomas B. McAvoy, president of the McAvoy Vitrified Brick Company, of Philadelphia, died January 12 at his home in that city. He was in his eightieth year and had not given active attention to business affairs for some years, but instead, had spent most of his time at his home in Atlantic City. For many years during the active period of his life he was conspicuous in the city's affairs, being a member of the Common Council from 1881 to 1891, after which he served two terms in the Select Council. He was a man of sturdy character and his influence was always in the interest of progress and honest administration. He was the foremost brickmaker of Philadelphia during his younger years. He identified himself with the National Brick Manufacturers' Association early in its work and was elected president in 1889, since which time he has maintained an active interest in its affairs. He was a member of the Masonic Fraternity and a number of other local organizations. He is survived by two sons and three daughters.

The Late Thomas B. McAvoy, Philadelphia.

WELL KNOWN SOUTHERN CLAYWORKER PASSES AWAY.

On December 10, 1917, Charles L. Krager, whom experts considered the most scientific clayworker in the South, died at his home in Atlanta, Ga. Mr. Krager was born in 1864 at Akron, Ohio, where he learned the trade of a potter.

In 1889 he went South and began the manufacture of stoneware at Daisy, Tenn. Later he developed and promoted the vitrified clay turpentine cup and manufactured annually as many as twenty million cups, which has so wonderfully contributed to the conservation of the pine forests. The United States Government took an active part in the introduction of these cups so as to supplant the destructive boxing method Three years ago, in partnership with B. Mifflin Hood, Mr. Krager began the manufacture of vitrified floor tile. The business was a success from the very beginning.

Since the war Mr. Krager devoted his fertile mind to the perfection of a packing for Glover and Gay Lussac chemical towers, with the result that the Hood's "Pottery" Clay Products Company, of which he was general manager, produced spiral rings so perfect that chemical engineers consider them to be more efficient and scientific than any packing made at home or abroad. Mr. Krager never ceased to experiment with clay. His ingenuity led him into untrodden paths in which he invariably developed some practical clay product. The things of most interest on the plant were his test kilns and trials. He believed that the Ceramic Arts held hidden treasures of priceless value for the diligent searcher into her secrets. So versatile was he that at the time of his death he had sufficient business with the Government to keep four plants in operation at full capacity for several months.

He was just a plain clayworker, who detested makeshifts, always sought after a perfect product, never satisfied with present results if better could be attained. He was a scientific clayworker who loved and dignified his calling. In the death of Charles L. Krager the South has lost its foremost clayworker.

BRICK MAN APPOINTED FUEL ADMINISTRATOR.

D. Warren de Rosay, the energetic manager of the Corry Brick & Tile Company, of Corry, Pa., writes that while he has made all of his plans to attend the coming N. B. M. A. convention he is in some doubt, for he has been appointed fuel administrator for the town of Corry, and in these strenuous days there is no telling what conditions may arise to make his presence necessary at home that week.

CLAYWORKERS DOING WORK FOR GOVERNMENT.

The best men in every line are being pressed into service for the government. This has been demonstrated by the appointment, by the War Department, of J. G. Barbour, of the Metropolitan Paving Brick Company, Canton, Ohio, as Federal Industrial Expeditor of the Canton district. Mr. Barbour's appointment will require him to keep in close touch with the manufacturers of war materials in his district in order to determine the co-operation of these plants with the government. Fred L. Dickey, general manager of the W. S. Dickey Clay Mfg. Co., of Kansas City, Mo., has received a like appointment for his district. Both of these gentlemen are serving their government without remuneration. Truly not all of the patriots have enlisted in the army.

LET US TAKE COUNSEL.

"And they said unto him, ask counsel, we pray thee, of God, that we may know whether our way which we go shall be prosperous."—Judges 18:5.

There is need, urgent need in fact, for the people in every branch of the industry and for the industry as a whole to take counsel with each other and with the wisdom which comes from the co-ordinating of inspiration and judgment to the end that we may guide the different branches of the clay working industry safely to the harbor of prosperity through the troublous times about us today. Every man in the business should attend the meetings of the trade, local meetings of neighbors, state conventions and the national convention and attend to seek and give counsel. It is not an occasion which leads itself to gaiety and social enjoyment so much as a day in which we need and should have serious counsel one with the other, and with the best wisdom that can be developed out of conference for the welfare of the industry as a whole. Many problems, peculiar to existing conditions, are confronting the industry. They are problems too that must be met and solved if we would protect the welfare of the industry, and the welfare of the industry in turn is essential to the prosperity of the country and the successful carrying on of military operations. So let us look upon this matter of conventions and convention attending this year as a species of patriotic duty, involving the serious questions of the moment, rather than frivolous indulgence in pastime, and make it a point to attend faithfully with open minds and for the broad purpose of general welfare of the industry as a whole.

LIFE INSURANCE IN 2, 3, 5, 10, 25 and 50-POUND CANS.

TO INSURE "the original stitched cotton duck belt" giving maximum service and satisfaction, the Gandy Belting Company, of Baltimore, puts out "life and satisfaction insurance" for its belts in the form of Gandy Belt Dressing.

All users of cotton duck belting will find Gandy Belt Dressing the tried and true preservative. It makes the belting soft and pliable, prevents slipping, and, besides increasing the efficiency in steady and full-power transmission, it keeps the belt always in the pink of condition and wards off old age.

A Handy Gandy Package.

Gandy Belt "life insurance" may be had in 2, 3, 5, 10, 25 and 50-pound cans.

At this time—war time—when so much is depending upon the manufacturers of the country, Gandy Belt Dressing will prove a valuable aid to maximum production.

HIS RIGHTS.

"Why did you strike this man?" asked the judge, sternly.

"He called me a liar, your Honor," replied the accused.

"Is that true?" asked the judge, turning to the man with the mussed-up face.

"Sure, it's true," said the accuser. "I called him a liar because he is one, and I can prove it."

"What have you got to say to that?" asked the judge of the defendant.

"It's got nothing to do with the case, your Honor," was the unexpected reply. "Even if I am a liar, I guess I've got a right to be sensitive about it, ain't I?"—Topeka State Journal.

MONOLITHIC BRICK PAVEMENT.

A Type of Road Which is Moderate in First Cost and Unequaled in Ultimate Economy.

IT IS GENERALLY CONCEDED that if properly constructed, a brick paved roadway is the most durable and dependable highway yet devised. Once such a road is completed, it is good for a long term of years without any repair bills or cost of upkeep of any sort. Hence, in the long run, it is really more economical than macadam roads even, or any similar highway which needs constant attention from season to season in order to maintain even a moderately good surface. The monolithic type of brick pavement is considered by many road experts as the perfection of highway improvement. Indianapolis now boasts of a short stretch of monolithic brick pavement, laid the past summer on that part of Meridian street which extends from the city limits south to the township line. It was constructed in two sections sixteen feet in width on either side of the roadway, the space in the center being left for street railway tracks.

Speaking of this roadway, the Hoosier Motorist, the organ of the Hoosier Motor Club of Indianapolis, says:

"The monolithic pavement differs radically from the old type of construction. Instead of laying the brick on a sand cushion the brick are laid on green concrete. The bricks are then rolled to give the pavement a smoother surface, after which a grout is applied made of equal parts of sand and cement. When the cement base and grout hardens the bricks are held rigidly in place, making one continuous pavement, having neither sections nor expansion joints.

"The concrete base for the South Meridian street pavement was five inches thick, making a solid depth of nine inches, after adding the height of the bricks used. The grout adds no height to the pavement, as it soon wears off, leaving a smooth, polished surface. No curbing is necessary for the monolithic type of construction, as the concrete base and top holds the bricks in position. Curbing was used on the outside of the Meridian street pavement, but the inside edges were left in true monolithic style.

"The monolithic type of construction was first tried in Illinois, near Paris. It is becoming a popular pavement on account of its low cost of construction and maintenance.

"The Meridian street pavement has been viewed by road experts from all sections of the country, who were greatly impressed with its qualities from an economical standpoint."

A Delegation Inspecting the Indianapolis Monolithic Brick Road While Under Construction.

Weather conditions permitting, those in attendance at the coming N. B. M. A. convention will be afforded an opportunity of inspecting this pavement and also the famous brick paved Speedway known the world over to professional drivers, and generally conceded by them to be the safest and fastest auto race track in the world. It is two miles and half in length and sixty to eighty feet in width. The Speedway has been illustrated and described so many times in The Clay-Worker that our readers are quite familiar with it, but we are pleased to again show an illustration of a portion of the track. Those especially interested will be afforded an opportunity of visiting the track, if they will make their desire known to the local committee Convention week.

The Hoosier Motor Club is one of the most successful organizations of the sort in the central west. It has permanent quarters on the ninth floor of the Claypool Hotel. Visiting motorists are welcome always and members of the N. B. M. A. are invited to make themselves at home in the club rooms during their stay in the convention city.

A PLEA FOR CONCERTED ROAD CONSTRUCTION.

The following resolution has been adopted by the American Association of State Highway Officials and presented to the Government through the Director-General of Railroads:

Whereas, The proper construction and maintenance of the highways of the country is necessary to the successful conduct of the war; and,

Whereas, The plans of all highways authorities in the country, all users of highways and all citizens interested in any way in highway construction and maintenance, are at the present time upset and tied up; and,

Whereas, There is need for a definite policy so that plans can be formulated for the coming year; and,

Whereas, A properly outlined policy directing the construction and maintenance of such roads and streets as are of general economic and military value will conserve the resources of the country and will greatly facilitate the transportation of freight over highways and streets; therefore,

Be It Resolved, That the American Association of State Highway Officials request the United States Government to formulate and promulgate, as soon as possible, a definite policy for road and street construction and maintenance, and that it is requested that said policy contain a statement that freight cars shall be furnished next spring for the transportation of the necessary materials for the construction and maintenance of streets and roads of economic or military value.

TWO BITS A DAY CLUBS.

Out in Phoenix, Ariz., a movement has been inaugurated for the formation of "Two Bits a Day" clubs, the members of which are to buy a quarter's worth of Thrift Stamps every day. Three men each took a hundred Thrift cards, pasted one stamp in each card, and sold the entire lot before two blocks had ben covered.

"Two bits" is the old term, dating back to the early days of the country, for a quarter of a dollar, and is still used in the South and West. Every patriotic American now wants "to do his bit"; the members of these clubs are carrying out this idea finely in doing their "two bits" every day. It is hoped that "Two Bits a Day" clubs will be formed all over the country in the great war-savings campaign.

ROAD WORK AND WAR WORK.

A recent newspaper announcement of a train or army trucks making a trip from Buffalo to an Atlantic port overland with war supplies is a graphic and impressive bit of evidence of the benefits even in war work that may come from good roads. Plainly what good roads we have are furnishing the one great measure of relief from the breakdown of our railway transportation. It is equally plain to the observing man that public sentiment in favor of good roads is stronger today than ever before, even strong enough to realize that good road work should go forward as well as war work, because the more good roads we have the better shape we are in to carry on the war. There has been more awakening to the great benefits of improved highways during the past year than ever before. So public sentiment as well as the needs of the day point unwaveringly to the necessity for keeping up the good roads work. Moreover, General George W. Goethals, in a recent report to the New Jersey State Highway Commission, said: "Modern highways are a military as well as a transportation asset, and whatever they cost, such improvements were never so greatly needed."

A Section of the Two and One-half Mile Brick-paved Speedway, Indianapolis.

Flue linings constitute an excellent item in clay products to feature during the year.

OUR CALENDAR SHOWER.

THE CLAY PRODUCT manufacturers, in general, evidently wished to economize this year, so far as boosting the business through calendars. Our calendar shower was not as heavy as usual, but the lack in quantity was made up in the quality of those we did receive.

The Geo. H. Clippert & Bro. Brick Co., Detroit, Mich., has favored us with an attractive wall calendar, which appears in a prominent place in our sanctum sanctorium. On an olive green background appears in separate panels the calendar pad and a beautiful picture of the Panama Canal, showing a war ship and several tugs plying their way through the divide.

A beautiful maiden, clad in riding attire, peers at us from the neat calendar of our old friend H. A. Wheeler, E. M., Consulting Mining Engineer, of St. Louis, Mo. Mr. Wheeler evidently has an eye for beauty.

Perhaps the two most useful calendars we have received for 1918 is that of the J. C. Steele & Sons, manufacturers of a complete line of clayworking machinery, Statesville, N. C., and Salmen Brick and Lumber Co., Slidell and New Orleans, La. These are large poster calendars, black and red, consisting of twelve sheets, 20 by 28, each containing a large calendar of the current month and miniatures of the preceding and succeeding ones. At the top of each sheet is the advertisement of the company; that of Steele & Sons shows a view of the factory and their brick machine and cutter, while that of the Salmens shows a view of their immense property at Slidell. These two calendars fit in admirably in our two departments, one gives the office force information as to when pay day will arrive and the other, the composing room gang, what little time they have to close the last forms for current issue

If you are the happy recipient, annually, of the artistic calendars of The Roessler-Hasslacher Chemical Co., 100 William St., New York City, you naturally look for something artistic with each recurring season. This year their illustration, "The Children at the Well," shows two chubby girlies in sandals and quaint costumes standing at a well watching a lizard crawl along the edge. A red unglazed old-time water jug stands on the ground, adding much to the general effect of the picture. The Roessler-Hasslacher Chemical Co. are manufacturers of high grade chemical colors and oxide.

"When you build with Shor-Tex you build for all time to come" appears prominently above a picture of Ramona, on the calendar of The D. C. Shorey Brick Co., 1404 Union Trust Bldg., Cincinnati. Ramona, an Indian maiden, is seen paddling in her canoe along the shore of a rippling stream, the water reflecting the light from the full moon, which has peeped out from a cloud-covered sky. A request for this calendar was made by several of our stenographers the minute it was received.

The Crawfordsville Shale Brick Co., Crawfordsville, Ind., manufacturers of Afghan Matt Brick, sends us a beautiful calendar bearing this timely message, "Give the world the best you have, and the best will come back to you." The illustration "Whispering Clouds," shows a village road, evidently just following a rain with the moonlight breaking through the clouds and lighting up the figures of the pedestrians and the thatched roof houses.

A very appropriate beginning of a new association, The Clay Products Association, Los Angeles, is their beautiful Build With Brick calendar showing a handsome brick bungalow, brick driveway, walls and fountain. The calendar pad is placed on a red brick panel and contains the dates of the current, preceding and succeeding months. Effectively located are the words, "Build With Brick." Actual figures prove the average first cost of brick construction to be but 12 per cent. more than frame. In seven years it's less. The calendar seen by the prospective builder should create a great demand for brick. More power to the Clay Products Association of California.

"The Soft Evening Hours" is the title of the welcome calendar of the Tuttle Brick Co., brick manufacturers since 1842, Middletown, Conn. It is a bright twilight scene, the refulgence of the departed sun fills all the western sky with golden tints. The placid pond has caught the rich coloring and reflects it back again through more subdued tones, while the whole landscape fairly glows in warm yellow light. It pictures well

"The whispering tree, the babbling brook,
The gentler nodding flower
In sweet communion welcome this
The evening hour."

CANADIAN CLAYWORKERS TO GATHER AT TORONTO.

GORDON C. KEITH, the secretary of the Canadian Clay Products Association, has completed his program for the sixteenth annual convention to be held at the Prince George Hotel, Toronto, Ontario, January 29, 30 and 31. As will be seen by the following, it provides for some very busy sessions:

"The Workings of the Workmen's Compensation Act and How Assessments are Determined for the Different Classes," by Samuel Price, chairman of the Workmen's Compensation Board of Ontario, Toronto.

"The Relation of the Economic Geologist to the Clay Industry," by N. B. Davis, B. Sc., M. A., Kingston.

"Kiln Konstruction Kinks," by W. G. Worcester, secretary of the Alberta Clay Products Mfrs. Association.

"Burning by the Use of Forced Draft and Low Grade Fuel," by W. G. Worcester.

"Features of Construction of a Big Brick Factory," by A. F. Greaves-Walker, ceramic engineer of the American Refractories Co., Baltimore, Md.

"Manufacture of Floor and Wall Tile," by Jas. McCabe, ceramic engineer of the Frontenac Floor and Tile Co., Kingston.

"Producer Gas-fired Dryers," by R. H. McElroy, International Clay Machinery Co., Dayton, Ohio, based on experiments by Profs. Parmelee and Hursh, at the University of Illinois.

"Tile," by Prof. W. H. Day, B. A., Ontario Agricultural College, Guelph.

"Motor Trucks in the Brick Business," by Angus German, manager Sun Brick Co., Toronto.

"Sewer Pipe Manufacture," by F. Coleman, M. B., of the Hamilton & Toronto Sewer Pipe Co., Hamilton. Discussion opened by Andrew Dodds, of Ontario Sewer Pipe Co., Mimico.

"Brick Manufacture," by L. L. Plant, Georgetown.

"Refractory Materials in Canada," by Joseph Keele, B. Sc., chief engineer, Ceramic Dept. Mines Branch, Ottawa.

It is expected also that C. W. Price, field secretary of the National Safety Council, Chicago, will be present, and take part in the convention.

In addition a large number of questions will be introduced for discussion. Included among these are: (1) What can be done to stimulate tile production?; (2) Best method of artificial drying for small manufacturers; (3) Kiln ideas to conserve coal; (4) Relation of furnace level to kiln floor; (5) Comparison of N. S. and U. S. coal for firing refractories;

(6) Market in Canada for refractories; (7) Is it cheaper to use crude oil (as fuel) than coal?; (8) What are the prospects of the clay products manufacturer after the war?

The annual banquet will be held at the Prince George Hotel, Wednesday night, January 30, with Joseph Russell, M. P. P., as toastmaster.

Write G. C. Keith, 435 Grace St., Toronto, for further particulars.

ILLINOIS SHORT COURSE WELL ATTENDED, CONSIDERING CONDITIONS.

THE SHORT course in Ceramic Engineering at the University of Illinois closed its two--weeks' program on Saturday, January 19. The program of lectures was carried through as planned, and those in attendance at the course expressed themselves as thoroughly satisfied with the results of their attendance. In spite of the disturbed industrial conditions at the present time, coupled with severe weather conditions which interfered greatly with traveling facilities, twenty-one men coming from ten states and representing eight different branches of the ceramic industries, were in attendance at the course. In addition to the lectures given by members of the university staff, the following lecturers from outside contributed largely to making the course a successful one: Mr. A. V. Bleininger, of the Pittsburgh Laboratory of the U. S. Bureau of Standards; Prof. C. B. Harrop, of the Department of Ceramic Engineering, at Ohio State University, and Mr Dwight T. Farnham, Industrial Engineer, of St. Louis, Mo.

Those in Attendance at the Short Course, Illinois University.

At the smoker held on Thursday evening each member in attendance at the short course gave an interesting account of present conditions in his particular branch of the industry especially with reference to the effects produced by the war. The following men were registered in the course: Wm. M. Stoneman, Macbeth-Evans Glass Co., Pittsburgh, Pa.; J. B. Casey, Mgr., Colfax Drain Tile Co., Colfax, Ind.; Leo A. Behrent, Midland Terra Cotta Co., Chicago, Ill.; Glenn C. Purdy, Green Engineering Co., East Chicago, Ind.; Joseph W. Tomek, Table Rock, Neb.; E. Rainey, Carter Brick Co., Peoria, Ill.; Ira Caswell, Industrial Brick Works, Booneville, Ind.; G. L. Wilcox, Jno. Wilcox and Sons, McLean, Ill.; F. J. Helwig, Trinidad Brick and Tile Co., Trinidad, Colo.; Wm. M. Clark, Chemist, Euclid Glass Div. of General Electric Co., Cleveland, O.; George E. Burton, Okla. Geol. Survey, Norman, Okla.; Edw. Anderson, Supt., Dayton Grinding Wheel Co., Dayton, Ohio; M. H. Straight, Adel Clay Products, Adel, Iowa; J. H. King, Colchester Brick and Tile Co., Colchester, Ill.; O. A. Harker, Jr., Mgr., Dixie Brick and Tile Co., Puryear, Tenn.; J. B. Krehbiel, Advance Terra Cotta Co., Chicago Heights, Ill.; George Hayden, Jr., Supt., Ohio State Brick and Stone Co., Shawnee, Ohio; B. F. King, Colchester Brick and Tile Co., Colchester, Ill.; Leslie M. Newton, Asst. Supt., Dixie Brick and Tile Co., Puryear, Tenn.; C. J. Tiernan, Mgr., Macomb, Ill.; J. R. Garden, Pres., Salem Brick Co., Salem, Va.

PROGRAM OF THE WISCONSIN CONVENTION.

The eighteenth annual convention of the Wisconsin Clay Manufacturers' Association will be held at the Republican House in Milwaukee, January 31 and February 1, 1918. Secretary Samuel Weidman has arranged for the following program:

President's address, Oscar Zimbal, Sheboygan.

Cost of Manufacturing Brick Under War Conditions, Oscar Wilson, Menomonie.

Some Methods of Conserving Fuel in Burning Brick, L. Haigh, Bucyrus, Ohio.

The Use of Oil in Burning Brick, C. E. Paeske, Milwaukee.

Relative Fuel Values of Various Coals, Oil and Producer Gas, Prof. O. W. Kowalke, Madison.

Fuel Problems Developed by the War, W. N. Fitzgerald, State Fuel Administrator, Milwaukee.

What Should the Clay Manufacturers Do to Meet the Shipping Problem? J. E. Randall, Indianapolis, Ind.

Tile Drainage Prospects in Wisconsin in 1918, Prof. E. R. Jones, Madison.

Adjusting Our Industry to War Conditions, John Ringle, Wausau.

ORGANIZATION OF THE CENTRAL OHIO SECTION OF THE AMERICAN CERAMIC SOCIETY.

A meeting was held at Zanesville, Ohio., on January 14, for the purpose of organizing a central Ohio section of the A. C. S., which was attended by forty representatives of the clay industries of Central Ohio.

A local section was organized and the following officers elected: :

F. K. Pence, chairman.

J. M. Morton, secretary.

A. S. Watts, Counselor.

Addresses were given as follows:

Points of Efficiency in the Dressler Tunnel Kiln, by Philip Dressler, London, England.

The Artist and the Clay Manufacturer, by Frederick Rhead, Zanesville, Ohio.

The American Ceramic Society in Its Relation to the Clay Manufacturer, by A. S. Watts, Columbus, Ohio.

The discussions following the addresses were very spirited and a lively interest in the new organization was manifested.

A MATTER OF VITAL IMPORTANCE TO EVERY CLAYWORKER.

There Are No Non-Essential Industries—Every Industry, Large or Small, Must Play its Part in Winning the War.

IN RESPONSE to a summons from Dr. Garfield's department, the War Service Committees of the various clayworking organizations gathered at Washington, January 18, to confer with the U. S. Fuel Administration as to the best and most effective means to conserve the coal supply. A meeting of the representatives of the leading associations of clayworkers, namely, the National Brick Manufacturers' Association, the National Paving Brick Manufacturers' Association, the American Face Brick Association, the Hollow Tile, the Drain Tile and the Refractories Associations, was held in the assembly room of the U. S. Fuel Administration and those present gave attentive hearing to a very clear and forceful address by Mr. P. B. Noyes, who, speaking for Dr. Garfield, stated that the prime object of the meeting was the conservation of the fuel supply, to the end that we might aid the government in winning the war. The latter object is the one paramount issue now confronting the people, and compels the approval and cordial co-operation of every patriotic citizen.

Mr. Noyes, in a very impressive manner, declared in substance that it is now clear to every thinking mind that there is **no** non-essential industry. On the contrary, every industry is essential and every industry must be maintained if the nation is to be successful in its great task of making the world safe for democracy. Mr. Noyes' statement was in effect much the same as that recently announced by the United States Chamber of Commerce, as follows:

Limitation of "Non-War Industries."

"The discussion of the 'limitation of "non-essential" industries' started with a very unfortunate misuse of words. The idea, as exploited in the newspapers, that the Government intended to cut off "non-essential" industries had in it possibilities for disaster.

All industries are closely inter-related. For instance, pianos and jewelry may be sent to Chile to pay for nitrates needed for ammunition, and no large class can be arbitrarily cut off without seriously upsetting the entire industrial fabric of the country. Certainly no industry is "non-essential" to the workmen and capital employed therein, and when one considers that over ten million people and thirty billion dollars of capital are employed by "non-war" industries, the need of caution in dealing with this problem is manifest.

On the other hand, our industrial equipment is limited. We do not have materials, machinery, transportation, labor or capital sufficient for fighting the great war and for normal business at the same time. The war must be prosecuted to the utmost, and business must shrink to provide the necessary equipment. The problem is to provide this necessary equipment with the least possible injury to the business of the country.

If so-called "non-essential" industries are "cut off," as suggested, many of them would be ruined and others permanently crippled. The Fuel Administration has worked out a plan which provides for necessary restrictions with the least possible injury to industries. This plan is as follows:

A. A complete coal budget, with a detailed estimate showing:
   1. Total coal production in 1918. (Bureau of Mines estimate.)
   2. Coal needed in 1918 for direct war work.
   3. Balance left for non-war industries.
   4. Coal used in 1917 by non-war industries.
   5. Total coal curtailment necessary for non-war industries.

B. Provide for necessary coal curtailment by the following steps:
   1. **Voluntary agreement** by each non-war industry to limit the least essential parts of its product, each industry making the reduction where it will do the least harm.
   2. **Formal order** from Fuel Administrator making legal and binding on the entire industry the various restrictions voluntarily agreed upon.

This plan applies directly to actual coal consumption only. The actual effect is to limit production. Consequently limitation in the use of coal will make a corresponding saving in transportation and in the materials needed for the war.

Committees representing each of the principal industries will be called to Washington and the necessary saving of coal arranged for along the lines suggested by the industry itself. Among the methods of saving are the following:

(a) Reduction of hours.
(b) Reduction of lines manufactured.
(c) Elimination of new lines or designs.
(d) More efficient management.
(e) Transfer of product from non-war to war.

The coal saved will vary according to the character of each industry. Our figures show that if each industry does its share, the coal necessary can be obtained without cutting down any industries so as to permanently injure them. Experience shows that these restrictions may even prove a benefit by eliminating wastefulness and inefficient practices which have grown up by careless management or stress of competition.

The above plan has already been tried out enough to prove its practicability. In each case the industry has given its heartiest support and shown its desire to co-operate with the Government in every possible manner. The voluntary saving shown by the industries already called into conference promises to be over 15,000,000 tons. The brewers have voluntarily agreed to save 700,000 tons; the boxboard manufacturers will cut their running time to five days a week. This will save 1,000,000 tons of coal and take 30,000 cars of merchandise off the railroads.

Finally, this plan places the country in an ideal position for the "war after the war." Each industry will be stripped for action and can enter the fight for its share of the world commerce with the confidence of men fully prepared.

Committees Appointed for Further Conferences.

It developed in the discussion following Mr. Noyes' address that there was too great a diversity of interest to permit of concerted action on the part of all of the associations represented, so representatives of the refractories and hollow tile interests withdrew and arranged for separate meetings. Subsequently the representatives of the building brick, paving brick and face brick interests held a conference with Mr.

Noyes, and it was agreed that each association should appoint two delegates, who, after further deliberation, should confer with Mr. Noyes for the purpose of reaching a basis on which the industries represented should operate in conformity with the rules and requirements of the Fuel Administration. Mr. William Schlake, of the Illinois Brick Company, Chicago, and Mr. Warren Griffis, of the Baltimore Brick Company, Baltimore, Md., were chosen as the representatives of the common building brick industry on behalf of the N. B. M. A. After further conferences any resultant developments will be reported to the members through the secretary's office. In the meantime the industry will continue as heretofore, with the knowledge that there will be no interference except that, if necessary, there will be a restriction as to the amount of fuel that may be used during the continuance of the present emergency.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

WITH THE COMING of the new year a spirit of optimism has taken hold of the clay products industry, which can not be accounted for by a cold survey of new business in sight. There is no doubt that 1917 was a good year for the brick men as a whole. It had its trials and tribulations, scarcity of labor, high wages, lack of needed transportation and the other factors which went into the makeup of that most remarkable year, but the upstanding fact remains that for the year the trade was prosperous. Just at present there is nothing new in sight to attract and hold the attention of clay or brick dealers, "but it is a new year, we are making progress in our war machine, and we are adjusting our business to the war." For fire brick there is a constant good demand from the government. It is not so plain where the demand is coming from for common building brick, but tile and terra cotta is not being produced in anything like its normal quantity, on account of two big concerns being burned out, and the market seems to be able to absorb this production. The magnesite people have had an unusually prosperous year. This mineral has come to the front by leaps and bounds in this country since the European supply was shut off, and if it can continue to prosper after the end of the war it will shine as one of the most important advantages in a commercial way which the United States has won from the European conflict. The value of the output in the year before the war was less than a hundred thousand, while its value last year passed the $4,000,000 mark. The record which usually shows the condition of the demand for brick in this city is the building permits. December's record of only $481,818 looks small beside the several months of close to $2,000,000 and one of nearly $3,000,000. But when it is taken into consideration that nearly all the new building being done here now is on government business, and that figures on government contracts do not appear in the building permits, the showing is not so bad. Looking at that other indicator of business conditions, the bank clearings, San Francisco shows up with a total of $438,515,579, a record beaten only twice during the year, and over $80,000,000 more than the same month last year. San Francisco's bank clearings for the entire year are fully one-third greater than the year before. All of the coast cities show large increases in clearings, and while these are not as large as San Francisco, the good clearings are one of the reasons why the clay products men are looking to the new year with confidence and optimism.

N. Clark & Sons have recently been awarded the contract for architectural terra cotta to be used on the new high school building at Palo Alto, and also for the terra cotta for the new Canton bank, which is being built in this city. These two contracts will take considerable terra cotta and are among the largest individual contracts of this kind for some time past. Most of the business in the terra cotta and tile lines is coming in small orders. There is very little inquiry for future delivery and what business is being done at present is for small lots and immediate delivery.

N. Clark & Sons have not been making any of their ware since their fire several months ago. They are now clearing up the property preparatory to rebuilding. This process has been delayed owing to disagreements over insurance, which have now been fully settled. By the first of February building will begin, and the plant will be rushed to completion as rapidly as possible.

The Pacific Coast branch of the Clay Products Association was organized in San Francisco early in December, and the locally managed association known as the Pacific Coast Clay Products Association went out of business. George R. Chambers, of Gladding, McBean & Co., was selected as chairman of the new branch; H. C. Muddox, of Sacramento, vice-chairman; Frank Costello, of the California Pottery Co., secretary. and George Clark, of N. Clark & Sons., treasurer. Besides representatives of the San Francisco houses, there were present representatives from San Jose, Sacramento, Los Angeles, Portland and Seattle.

One of the biggest contracts of recent date, except those for government use, of which no details are made public, was closed by the Stockton Fire and Enamel Brick Co., for a million bricks, to be delivered to the Pacific Gas and Electric Co., for the new generator which that corporation is building.

George R. Chambers, of Gladding, McBean & Co., has been called on the Federal Grand Jury. He says that he is going to have a very busy two months, even if business is dull in his regular line.

E. G. Carr, who was injured while in the employ of the Sacramento Clay Products Co., in 1913, and, after long litigation, had a verdict of $7,500 awarded him by a jury, has just had that award confirmed by the higher court.

A Santa Barbara company which is supplying that section of the state is the Parker Brick Co. During the past year they turned out over a half a million brick a month, besides a considerable amount of drain tile and hollow builders' tile.

The Livermore Fire Brick Co. is building a large tank and some sheds at its plant in Livermore, and getting ready to increase its output.

The Richmond Press Brick Co. is making extensive improvements in its plant, which are estimated to double its capacity.

San Francisco, January 5, 1918. SUNSET.

THE PROCESSES OF CIVILIZATION.

While waiting for Billy Sunday to appear at one of his Philadelphia revivals, a seedy-looking man got involved in conversation with a man next to him.

"Why," asked the seedy one, "why do we send missionaries to the savages?"

"To civilize them," said his neighbor.

"And what then?"

"To become prosperous and rich."

"What good does prosperity do them?"

"It procures them leisure and comfort."

"Which," said the seedy one, with a grin, "was what they had before you started stirring them up, What's the use?"

OFFICIAL ANNOUNCEMENT and PROGRAM

THIRTY-SECOND ANNUAL CONVENTION OF THE N. B. M. A., INDIANAPOLIS, INDIANA, FEBRUARY 10 TO 16, 1918.

Entertainment Features and Meetings of Allied Organizations, The National Paving Brick Manufacturers' Association, The American Ceramic Society and Other Associations.

THE THIRTY-SECOND ANNUAL convention of the National Brick Manufacturers' Association will be held at Indianapolis, Ind., February 10 to 16, 1918. Indianapolis is the center of the clay industries of the nation and can be reached conveniently and quickly from all sections of the country. Hence it is anticipated that there will be a large attendance. As has always been the case, all sessions of the N. B. M. A. conventions are open to the public. It is not necessary to take membership in order to enjoy the proceedings, but the greatest benefit to participants is derived from membership and an active part in the proceedings and entertainments.

These Are the Days for Team Work.

The grave and important problems that now confront every branch of the clayworking industries make it exceedingly desirable for the representative men in each branch to meet and consider carefully the new conditions under which plants must be operated and products marketed. Never before was there a more urgent need for exchange of views on the various questions which are now perplexing the wisest and most experienced manufacturers in the land. Be it remembered that "in a multitude of counsel there is wisdom." Every member is expected to be present and do his bit toward meeting the new conditions in a manner most apt to spell the largest measure of sucecss during the following season.

Main Lobby Claypool Hotel.

The Claypool Hotel Headquarters.

A large attendance is anticipated, and it is therefore advisable to request reservation of such accommodations as may be desired at an early date. In writing in regard to rooms, etc., the date of intended arrival should be mentioned together with the number in party and character of accommodations desired. The Claypool Hotel has an unusual number of large rooms with bath, so that parties desiring to room together may be accommodated, and single beds furnished when desired. If single rooms ensuite are preferred, they may be had for the asking. The rate will be from $2.00 up, on European plan, according to location, etc. For reservations, address the Claypool Hotel, Indianapolis, or Secretary Theo. A. Randall.

No Reduced Railroad Rates.

The stress under which railroads are now being operated precludes the idea of any special rates, but really, this does not matter much, for delegates can use their mileage books, thus obtaining the lowest through rates and the added privilege of stopping at desirable points en route, either going or coming, as it may suit their convenience. They may also come and go by different routes, which ofttimes is a decided advantage where it is desirable to visit clay plants or other points of interest. Travel within Indiana is on a two-cent basis. Interstate travel, if Central passenger mileage books are used, is on the basis of two and one-quarter cents.

Convention Hall and Exhibition Room.

The sessions of the National Association will be held in the Assembly Hall of the Claypool Hotel, on the eighth floor. Space in same will be provided for the display of specimen brick, tile or other clay products, trade literature, etc., free to members. The leading clay machinery manufacturers have already secured rooms on that floor, where they will welcome visitors and impart desired information relative to their respective products. Those desiring space in the exhibition room are requested to confer with the secretary.

Claypool Library and Reading Room.

Entertainment of Ladies.

A special local committee will look after the entertainment of visiting ladies. The latter are requested to register with the assistant secretary on arrival, when they will be given the program of events, guest badges, and other souvenirs.

Theater Party Wednesday Evening.

Visitors will be entertained as guests of the local committee Wednesday evening at the beautiful Circle Theater, where, by courtesy of the management, special music and other features will be interpolated in the regular performance. The Circle Theater is generally conceded to be the most beautiful picture play house in the world, and a delightful evening is assured for all.

The N. B. M. A. Associational Dinner.

The annual banquet, or N. B. M. A associational dinner, will be given in the famous Riley room of the Claypool Hotel, Thursday evening at 7:00 p m. Following the rule which has prevailed for several years, it will be a subscription banquet under the direction of the executive committee assisted by the local committee. The guest of honor will be the Honorable William C. Redfield, Secretary Department of Commerce, Washington, D. C. Other eloquent speakers will respond to toasts befitting the times. The ladies will grace the occasion, as usual, and full evening dress, while in order, will by no means be necessary.

Meetings of Affiliated Associations.

As usual, the allied organizations will hold meetings Monday and Tuesday in the various assembly halls of the Claypool Hotel. Every branch of the industry, which is represented, will be afforded ample accommodation.

THE NATIONAL PAVING BRICK ASSOCIATION will hold its annual board meeting Monday and subsequent sessions Tuesday. Those desiring further particulars will please address Secretary Will P. Blair, Engineers Building, Cleveland, Ohio.

THE INDIANA DIVISION of the American Face Brick Association will hold its sessions Thursday afternoon. The Secretary, Earl C. Hervey, Board of Trade Building, Indianapolis, will give particulars on request.

Glimpses of Claypool Atrium.

THE INDIANA DRAIN TILE ASSOCIATION and affiliated bodies will meet on call of the Secretary, James E. Randall, 211 Hudson St.

THE AMERICAN CERAMIC SOCIETY will hold its first regular session Monday forenoon in the Palm room, on the ninth floor of the Claypool Hotel. A program of sessions and events is in course of preparation. It will be mailed to members, others desiring same will be supplied on request to Arthur S. Watts, secretary pro tem, Ohio State University, Columbus, Ohio.

The A. C. S. Section Q.

Monday evening there will be an informal dinner and business session of the American Ceramic Society in the Riley room, to which all delegates, whether members of the society or otherwise, including the ladies, will be welcome. There will be special music and other entertainment features. This function will be given under the direction of the Membership Committee of the A. C. S.

N. B. M. A. PROGRAM.

First Session, Wednesday, February 13, 2:30 P. M.

Opening Prayer—Rev. S. C. Wicks, Indianapolis.

Address of Welcome—Hon. C. E. Jewett, Mayor of Indianapolis.

Response to Address of Welcome—Elisha K. Kane, Kushequa, Pa.

President's Annual Address—Fritz Salmen, Slidell, La.

Treasurer's Report—Jno. W. Sibley, Birmingham, Ala.

The Duty of the Hour—G. W. McNees, Kittanning, Pa.

Papers for Subsequent Sessions.

Benefits of Social Co-operation in the Brick Business—S. Geijsbeek, Secretary Oregon Clayworkers' Association, Portland, Ore.

Co-ordination in the Brick Business—W. K. Hammond, New York, N. Y.

Waste in the Clay Industry—General Discussion Led by W. D. Richardson, Columbus, Ohio.

Report on the Brick Pier Tests of the Co-operative Investigation Between the N. B. M. A. and the Bureau of Standards (Illustrated)—J. E. Bragg, Pittsburg, Pa.

Co-Operative Manufacturing—Frank W. Butterworth, Danville, Ill.

Kiln Floors—Robert Twells, Alton Park, Tenn.

Art in Brick and Landscape Work—B. Mifflin Hood, Atlanta, Ga.

Fuel and Labor Economy—Harold Copping, Kankakee, Ill.

Color Schemes in Architecture (Illustrated)—O. W. Ketcham, Philadelphia, Pa.

Brickmaking the Hoosier Way (Illustrated)—H. C. Kleymeyer, Evansville, Ind.

Brickmaking in Louisiana (Illustrated)—Fritz Salmen, Slidell La.

A Typical Buckeye Brick Plant (Illustrated)—R. C. Burton, Zanesville, Ohio.

Brickmaking in Utah (Illustrated)—John P. Cahoon, Salt Lake City.

Cozy Writing Room, Claypool Hotel.

Burning Brick with Producer Gas in Indiana (Illustrated)—Charles F. Herman, Tell City, Ind.

What Are We as Clayworkers Doing to Win the War?—H. H. Titsworth, Brazil, Ind.

The Essentials of Success in the Manufacture of Refractories—C. D. Gregg, President Evans & Howard, St. Louis, Mo.

The Nation's Fire Waste, Its Prevention—W. E. Mallalieu, General Manager National Board Fire Underwriters, New York City.

Simplified Accounting for Brick Manufacturers—Geo. C. Olive, Indianapolis, Ind.

Reports of Committees and Miscellaneous Business.

Entertainment Features.

The local Committee on Entertainment is arranging for some unusual stunts for the pleasure and edification of the delegates. Visiting ladies will be given particular attention. A special program will be announced from day to day during the convention.

Souvenir Badge and Number Button.

An appropriate souvenir badge and number button will be presented to each member and a guest badge to those accompanying the delegates, same being provided with the compliments of the local committee. The badges will be distributed by the Secretary of the N. B. M. A. at his headquarters on the mezzanine floor of the Claypool Hotel, where all members and visitors are requested to call and register on arrival.

Those interested directly or indirectly in clay work of any character or the use of clay products of any sort are invited to join the association and participate in the proceedings of the convention. Members and their families or friends who may accompany them will be expected to participate in all the entertainments and proceedings.

Those desiring further information as to requisites of membership in the N. B. M. A., formal program, etc., are requested to communicate with the secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,
FRITZ SALMEN, President.
THEO. A. RANDALL, Secretary.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

We Should Say Not.

Editor The Clay-Worker:

Do you think we could start the New Year in any better way than by subscribing for your Clay-Worker? We enclose you amount to cover same. Yours very truly,

WESTBROOK CLAY PRODUCTS CO.

Westbrook, Me., January 1, 1918.

Veteran Brickman Retires.

Editor The Clay-Worker:

This is to notify you that I will not want The Clay-Worker sent me any longer after my time is out, say January 1, 1918, as I have decided to retire from the business after twenty-nine years in the brick business.

I have been a subscriber to The Clay-Worker most of this time, and have always been an appreciative one, I can assure you.

With best wishes for your success, I beg to remain,

Yours very truly,

Clarksville, Tenn. W. A. SETTLE.

More About Pug Mills.

Editor The Clay-Worker:

In your November number of The Clay-Worker you have an article on "The Pugging of Clay," by Robert Twells. In the first place, he says that he has difficulty in getting his clay properly pugged. He also says that he calls an expert in and he advises him to throw out his short pug mill and put in a long one, or that he buy another one and place at the end of the short one; but he says, further on, that this advice may be all right, but he doubts it, as he says that we shall see later. Now, if he doubts an expert, why call one in? There is one place in his letter where I agree with him. He says that it is better to have a pug mill of the short style, but it must not be overworked. Now, that is all right, but there are several of his assertions I don't hold with.

One is in placing the knives farther apart in a certain part of the pug mill, so that the clay traveling the fastest may catch up with the clay traveling the slower and press it all together. Now, if he does this with a plastic clay, he will not get it properly tempered, as the clay would be pressed together before it was tempered. Now, I have had a lot of experience with all kinds of clays, and I find that there are two pug mills that are best adapted for pugging plastic clays. One is what we call a double-shafted pug mill. You don't get the strain on your engine and machinery, but you get the best results, as the shafts work in opposite directions. You may get still better results by placing a pair of small rollers at the end of the mill so that the clay can pass through the rollers before falling into the brick machine. There is nothing that tempers the clay better than a pair of small rollers, as by passing through the rollers you get the clay squeezed so thin that it works it all to one mixture, and by this process you can let your clay travel faster.

Now, the other pug mill is one 18 inches wide at the receiving point, 16 inches at the outlet. This makes it so that the clay has to be forced along, instead of running freely. You can get the pressure on the clay to make it combine before reaching the machine, but this pug mill needs more power to drive and it does not do its work as well as the double shaft and the rollers. I had charge of a yard in the old country for 11 years, where we used a plastic clay, and before I took charge they could not stop lamination. Now, we had two pairs of rollers weighing four tons a pair, then an eight-foot mixer, then another pair of rollers, same weight as above, then another eight-foot mixer, then a machine with a barrel six feet long and a mouthpiece 18 inches long, and that would not stop the lamination. The reason was they wanted quantity and the clay traveled too fast to give it proper time to mix. Now, I will tell you what benefit I got from using rollers. I attached a pair of express rollers at the end of the mouthpiece of the machine and I got the quality, and quantity, too, without any lamination. If Mr. Twells would like to write me, I will give him a wrinkle or two on how to get his clay mixed properly without endangering the quantity of bricks made. Of course, open bodies of clays don't need so much looking after as a plastic clay.

I speak from a practical experience of forty years in the clay trade in all its branches. H. W. HARDY.

Woman Not Employed on Brick Plant Yet.

Editor The Clay-Worker:

Replying to your favor of the 27th inst., beg to advise that we don't have any women employes. We had considerable difficulty some time ago on account of our employes laying off without any apparent reason, so we ran an ad in a local paper for young women, and received quite a few replies, both by mail and in person. This had its effect and our employes are doing much better; in fact, so much that we do not need the ladies for this particular kind of work just now. We are,

Yours very truly,

Mt. Braddock, Pa. H. WATSON,
General Manager Eureka Fire Brick Works.

Storing Ice in Brick Kilns.

Dear Mr. Randall:

As you probably know, most of our clay is below the natural water level, with a water bearing strata under the clay. The result of this is that our sixteen years' operation of the plant has resulted in several acres of ponds.

During our recent cold spell we had ice about nine inches thick on these ponds, and as there seems to be a probability of scarcity of artificial ice next summer because of the difficulty of getting coal and ammonia, we have been cutting ice for the past few days, and have about four hundred tons of good quality ice stored in one of our brick kilns and will probably fill another kiln or two before the winter is over.

We thought you might be rather interested in this somewhat novel phase of the brick business.

Yours very truly,

SOMERS BRICK COMPANY.
Hubert Somers, Treas.

Burning Brick With Pulverized Coal Fuel.

Editor The Clay-Worker:

I read an article lately in the correspondence department of The Clay-Worker about coal dust. There seems to be a misunderstanding in the use of the term "coal dust" as applied to burning brick. As far as using coal screenings mixed with slack or coal dust sweepings is concerned, this fuel is used in the direct fired continuous kiln by dropping small quantities at intervals among the glowing brick. Now, the pulverized coal fuel of which Mr. Orr has spoken is quite a different fuel from slack coal. The coal is crushed and ground into an impalpable powder, which, when mixed with air, preferably preheated, burns like gas.

Now, before brick can be burned in a down-draft kiln, using pulverized coal fuel, there are a few seeming difficulties to overcome: First, maintaining a slow fire for water-smoking and heating up, and, second, a system of kiln bottom that will not clog up with the fine ash that floats with the draft and deposits in the flues below the floor, interfering with or shutting off the draft even before one burn has been completed. Then, provision must be made for preheating the air of combustion. This may be done by using the McManigal system of taking the heat from the kiln crown, or by the Butler sub-floor recuperative system, or by the Siemens regenerative system. As for the furnace and method of igniting the fuel, this can be done, first, either by gravity, i. e., by dropping the coal to run over brick slopes in the furnace, where it ignites as it falls and comes into contact with the preheated air; or, second, by using a large fire box or "dog house" projecting out from the kiln. The coal is blown into the furnace with just as little aid as is necessary to float the coal or separate it, which would be about 1-7 of the air of combustion; the other 6-7 would be preheated air, drawn or blown into the furnace by either of the already stated systems. Now, we can overcome the first difficulty by using waste heat for water-smoking, or a substitute fuel for heating up. Having a kiln bottom that will not clog up, and which can easily be cleaned without disturbing the kiln floor, is another difficulty to overcome. We know that a kiln with a free draft will burn its quota of brick quicker than a kiln with a sluggish draft. We also know that the ordinary round down-draft kiln with the cross-head flue would clog up with the ash, which is carried away with the fuel in burning brick with powdered coal. Pulverized coal may contain from 15 to 40 per cent. ash and when blown into a furnace the ash is carried with the draft. In a down-draft kiln the ash would be deposited anywhere between the furnace and the base of the stack; seldom will it reach the latter point without being carried up and out of the chimney. Setting the brick so that the ash will not interfere with the draft through them is no difficult matter.

To get a clear idea of the ash difficulty, let us figure a little. We have a kiln holding 100,000 brick and propose to use, say, 500 pounds pulverized coal per thousand. With coal containing 25 per cent. ash, we have six and one-quarter tons, and with a coal containing 40 per cent. ash we have ten tons to deposit in the kiln bottom. Now, how many ordinary down-draft kilns would have a free draft throughout the burn with this ash falling in the kiln bottom? The writer has designed two different kiln bottoms, having direct flues to the central flue, which can not clog up and which can easily be cleaned without tearing up or disturbing the kiln floor. The cross-head flue in a round down-draft kiln has been talked of as standard construction, but with the coming use of powdered coal the cross-head flue can find no place in the round down-draft kiln.

Respectfully submitted,

WILLIAM A. BUTLER.

A National Association of Drain Tile Manufacturers to be Formed February 11.

To the Drain Tile Manufacturers of America:

Gentlemen:

Every manufacturer in this country is intensely interested in the car and coal shortage problems. Let us review what has been accomplished and then be prepared to take further action. A meeting of delegates from the several drain tile states was held December 5th, LaSalle Hotel, Chicago. At this meeting Illinois was represented by six delegates, Indiana by six, Ohio by three, Iowa by one (the Secretary of the Western Drainage Bureau), and Wisconsin by proxy.

The Car and Coal Shortage Problem.

At this meeting the entire session was devoted to discussion of this problem—every state organization presented a review of the work it had accomplished. At the end of the meeting it was the concensus of opinion that a National Association of Drain Tile Manufacturers should be founded to take care of national questions. Each secretary of the State Organizations agreed to carry on some effective work in his respective state, gathering letters of endorsement from heads of agricultural colleges, county agents, influential officers, and members of farmers organizations, the governor of the state, and from every possible source to lend strength to our arguments for the need of cars and coal in such a worthy cause—producing and using tile to advance tile underdrainage and thus increase crop production.

Our case has been presented to the various committees in Washington through state organizations. The results have not been discouraging, but there is no definite assurance of safety. It is absolutely essential, therefore, that the matter be handled in the broadest and most thorough manner. The effort must be shown to be from the entire industry. Individual effort has its effect, but co-operation and united strength is what the industry needs. A National Association of Drain Tile Manufacturers is, therefore, urgently needed. In fact, the government requests that every industry be represented by a National organization.

The state organizations have done their work well, the letters of endorsement and statistics desired are being gathered together and filed by the temporary secretary for ammunition in case we are to present the facts before the Washington officials.

Everything possible is being done to place the drain tile business on a safe and permanent basis. There are many other questions to be considered outside the coal and car shortage problems. This can only be accomplished through a National Association. Every drain tile manufacturer should join.

The Condition of the Trade.

The condition in the drain tile business can well be shown by the condition of the National Drain Tile Co., the largest manufacturers of drain tile in the world. If there is any drain tile firm on earth that can get cars or fuel the National Drain Tile Co. stands pretty close to the top of the list. The true condition is shown, therefore, in the knowledge that this company was compelled to shut down its plants with an enormous stock of tile on hand, simply because they could not get empty cars in which to ship and no fuel with which to continue to run. This company is not effected so much in respect to securing of fuel, for at Terre Haute they have a coal mine within 500 feet of their plant from which they could haul coal to the plant in wagons. But they are compelled to shut down just the same as if they were located 100 miles from Terre Haute, because the U. S. fuel order does not designate, as is proper, in favor of any of the drain tile manufacturers by any means, and this company has had to close down its plants the same as the rest of the drain tile manufacturing concerns.

The Need of a National Association.

When the National Drain Tile Co. closed down its plants at Summittville, Hillsdale and Terre Haute there were at least 900 cars of tile on hand. If this amount could be shipped to the trade, or, in other words, could be placed on the market, the entire bottom would fall out of the present prices in less than thirty days, not to say anything about the stock of tile that is held by he other manufacturers over the country. This condition the drain tile manufacturers of the country must face. It is absolutely necessary, therefore, that ways and means be considered and action taken to correct the situation and to increase the demand for tile to such an extent that reasonable profit will be secured in the end.

This can best be accomplished through the continued effective work of the State Associations and the founding of a National Association where National matters may be handled in co-operation with the state organizations. Let us have a unity of purpose and make an effort along definite lines with the constant point in mind to help the entire industry. Let us take steps to prevent disaster to our trade. Become a charter member of the National Association of Drain Tile Manufacturers. Be present at the meeting to be held in Indianapolis, Claypool Hotel, February 11 and 12. If by any chance you have not received a letter giving information in this particular get in communication with the writer.

JAS. E. RANDALL, Secretary,
Indianapolis, Ind.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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One copy, one year (if not paid in advance)	2.50
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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis

Vol. LXIX. JANUARY, 1918. No. 1.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Be of Good Cheer.

* * *

The railroads are now properly pooled.

* * *

Transportation problems are not so tangled as they were.

* * *

It will be clay products at the Claypool in Indianapolis all of the week of February, 10-16.

* * *

Seek counsel of your fellowmen at the N. B. M. A. gathering, Claypool Hotel, Indianapolis, February 10-16.

* * *

Seven dollars and a half is not much, but it pays the initiation fee and first year's dues in the National Brick Manufacturers' Association. Who'll be the next?

* * *

There is natural grief at the loss of life in the army ranks, but if the data were available in equally concise form we might find much room to rejoice over lives that are saved and men that are restored to robust health by the wholesome training of camp life, for we are undoubtedly saving lives as well as losing some.

* * *

Prospects for building activities during the year show up brighter than they did awhile back.

* * *

Keep up the good work of reminding people that brick is the best building material to be had here or anywhere else.

* * *

Every business organization should have a war committee and such committees should strive to help both war and business.

* * *

If you are a drain tile manufacturer one of the progressive steps to make is a membership in the new National Association.

* * *

Being boss of all the railroads of the United States is about the biggest industrial job in the world and it is being taken on at a time to try the metal of the whole organization as well as the man chosen for boss.

* * *

One of the oft-heard predictions is that a great realty and building boom will be due this country when the war ends. Let us look forward then and be prepared to both produce and push clay products for building.

* * *

Modern methods for power plant construction and operation and in kiln burning which make for fuel saving are worth while even when fuel is comparatively cheap, and they become imperative when fuel is dear and scarce.

* * *

There is evidence that we have passed over the top in the high cost of living, but there is still need for conservation and thrift that we may stay on the right side and properly care for the civil population as well as promote the welfare of our boys at the front.

FOUR TOTTERING WALLS.

A newspaper account of a recent fire of some magnitude started out by saying that four tottering brick walls enclosing a smouldering mass of charred rafters and twisted steel was all that remained of a big three story building which had been gutted by fire.

Those four tottering walls carry an impressive object lesson of the safeguards and the benefits that come from building with brick. The fire was a hot one in a garage in which was stored many machines and quantities of gasoline, and from time to time an exploding tank had scattered gasoline and augmented the fire, yet notwithstanding that the building was in an old congested block in the heart of a big city the fire did not spread beyond these four brick walls.

It is easy to conceive what might have happened with a fire of this kind had the walls been of anything else but brick. Therefore these four tottering walls were left as standing monuments to the safety and fireproofing quality of brick.

CONVENTION BENEFITS.

Never has there been a time when there was a greater need for manufacturers generally to get together for mutual counsel and advice than at the present time, and this is true in the brick field no less than in other industrial lines. The best way to do this is to join the National Brick Manufacturers' Association and attend the coming convention at Indianapolis, Ind., February 13, 14 and 15. Every brick man, no matter what his product or output, should be a member of the National Association. He owes it to himself and to the trade.

"Give to the world the best you have, and the best comes back to you," applies to the man who gives of his trade knowledge. Many of the members of the N. B. M. A. can give innumerable instances where they have received valuable information on the floor of the convention and in the lobby talks, that has enabled them to solve problems that had bothered them for a long time. The membership fee is so small that every man interested in the manufacture and sale of clay products can afford membership, even though he must occasionally miss a meeting.

"PACK UP YOUR TROUBLES IN YOUR OLD KIT BAG, AND SMILE, SMILE, SMILE!"

If you have not already made plans to spend the week of February 10 to 16 at Indianapolis, in order to take in all the meetings of the clayworkers, do so now. The ladies, bless them, always enjoy getting away from home for a week of rest and recreation, and N. B. M. A. convention week is one of the best of the year for them, so pack up and come to Indianapolis for the second week in February, prepared to do your bit, and go back home with enough new suggestions and enthusiasm to last throughout the year.

SAVING COAL AND DAYLIGHT.

One of the ideas being urged to help save coal during these strenuous days is that of saving daylight by moving the clocks of the country up an hour. While apparently we should be able to move our working schedule up an hour without disturbing the clock, still it seems that we are not able to do so, and so many are in favor of moving the clocks up that a bill, known as the Daylight Saving Bill to this effect, is now in Congress and we are asked to urge the passage of this bill to help save coal as well as to develop the practice of doing more of our work in daylight. We need to save coal and it is best for us to utilize the daylight hours for working because the daylight is better than any artificial light. So if moving the clock up is necessary to gain this end we are for moving the clock up. All those who are in favor of this idea may help the cause along by writing their Congressmen and Senators asking them to push the Daylight Saving Bill.

THE NEW EQUIPMENT.

We have no means of knowing just how many clayworkers have been deterred from making changes and alterations and adding new equipment by a feeling that prices are too high, new machinery is difficult to secure and machinery manufacturers are too busy making war material to interest themselves largely in new equipment for clayworking. We encounter some sentiment of this kind in the rounds, and can only guess at the extent of it, but seemingly it is more extensive than there is need for.

Moreover, sentiment is based on false premises. It is a mistake in the first place to assume that the clayworking machinery people are so taken up with war needs that they have lost interest in clayworking machinery. The fact of the matter is they are not only keenly interested in clayworking machinery but most of them seem to be furnishing more of this kind of equipment than the trade as a whole seems aware of, and they are prepared to give the usual thoughtful attention to inquiries and demands on the part of the clayworking industry. Moreover they are just as anxious to do business in their regular lines, even though some of them devote part of their energies to helping the government with war needs.

Now, as to the matter of prices, it is true that machinery and all metal parts cost more now than previously, and it is equally true that the higher prices for metal are likely to prevail for some time even though the war may end, because the industrial demands and the requirements for reconstruction will continue to draw heavily upon the metal resources of the world. So if you need new equipment it is better to pay the price and be prepared than to wait until the reconstruction days come and find you still have to pay the price and are unprepared to meet the requirements upon your own plant.

New equipment needs should be measured by possible activities in the industry and in the individual plant. And what this may be every man will have to determine for himself by a careful canvass of his own situation. The point aimed at here is that if you need new equipment do not practice procrastination, but rather get in your order earlier for under existing conditions it requires a little longer to get new machines and new parts. So you should get at your additions and alterations earlier that you may be prepared on time to take care of the needs of your trade. A mighty good plan is to see the machinery men at the N. B. M. A. convention.

INCOMES AND PROFITS.

Not only will the tax man get us coming and going by dipping into personal incomes and business profits, for money neded by the government, but the necessary process of parceling out the financial burden that each must carry will involve a whole lot of questions and answers both about incomes and about business items which will make vexing perplexities and troubles for almost everybody. The patriotic thing, of course, is to take it in good spirit, for the government needs the money. If we feel like fussing about it we can blame it on the Kaiser, but the more cheerful thing is to look for the good that may come out of it. For one thing it will enforce what might be termed model bookkeeping among business men, and the standardizing of accounting, which will reduce it to a more positive basis and make a man's financial status more readable to his banker and put him in better shape all around. The trade will have more positive knowledge of what constitutes profits, of what their net incomes are, and of what charge should be made for depreciation and for many other items on which there has been much difference of opinion heretofore. In the end the knowledge gained from this exprience will be of much benefit to the trade.

THE CONVENTION SEASON.

Winter is the convention season all around with the various industries of the country, and many annual meetings are held both of local and of national organizations in the business world.

This year there is seemingly a mixture of sentiment about these meetings. Some feel that we should put on the soft pedal, and point out that if our boys go into action in France and the calamity list begins to arrive the average business man will not feel like enjoying himself at a convention. These think that the whooping up of conventions this year is a mistake, or should be done with the soft pedal at least.

There is another and more logical viewpoint. While plainly we may cut down the festivities, and while enjoyment may be marred by news carrying calamity lists, the fact that we are engaged in a war for the sake of democracy makes it all the more important in a business way for men to get together for the good of their industry and for the good of the country as a whole. There has never been an occasion in the history of the United States when there was more need for team work, co-operation and a unity of effort all around. We need co-operation not only among different members of the trade or industry, but between the various industries, and between business and the government itself.

So while the convention season this year may well have the festivities curtailed this should not be mistaken as a proposition to curtail the attendance at the conventions or to cut down the work mapped out for such conventions. There are serious problems before us on all sides, problems than can best be met by getting together in conventions and getting unity of action. There is a greater call than ever before for large attendance and serious work at every convention in the clay-working industry to be called this winter, no matter whether it is a local meeting, a state meeting or the annual N. B. M. A. gathering. Let us make each gathering the greatest on record and make the planning for earnest work rather than for more enjoyment and festivities.

TRADE LITERATURE.

The E. I. DuPont DeNemours Co., manufacturers of the DuPont powders, has a most capable publicity staff. We are pleased to receive their bulletins and publicity articles, the subject matter of which, in many cases, is acceptable for use in our reading columns. Especially is this true of the articles dealing with the use of explosives in road, drainage work and clay mining. If you are interested in the use of explosives, write to the above named company, Wilmington, Dela., and you will receive detailed information as to actual practice, etc. See their advertisement on page 73.

We received a few weeks ago, a copy of a booklet issued by the Napierville, Ill., Association of Commerce from which we are glad to learn that our old friend Fred W. Von Oven, of the Martin-Von Oven Drain Tile Co., is doing effective work for his community as president of the Association of Commerce of Napiersville. Mr. Von Oven is president of the Illinois Drain Tile Manufacturers Association, and has been an active member of clay products organizations for many years.

"Leary Conveyor Systems" is the title of a handsome catalog issued by the W. J. Leary Manufacturing Company, Buffalo, N. Y. It is well illustrated and contains a splendidly written pronouncement and subject matter setting forth the merits of this type of conveying system in operation in freight houses, wharf terminals; the Leary multiple lightage coaling an ocean greyhound in harbor, in buildings elevating ashes, and on brick plants conveying green and burned brick and raw materials. Every brick manufacturer in this country will, no doubt, be interested in the Leary method. If you have not received this catalog you can secure same by writing the above named company. See their advertisement on page 15.

THE REAL MEANING OF THRIFT.

Just now the word thrift is heard on every hand. A great program of thrift has been instituted by the Government at Washington. Thrift is being preached everywhere—in pulpit and press, in clubs and other meeting places, shouted abroad in the streets. The very letter that comes to you in the morning mail bears a legend to the effect that food will win the war and that all must economize. What is the meaning of this thrift?

For many years students of political economy, of whom Adam Smith and John Stewart Mill perhaps are best known to the American people, have written of thrift and its effect upon the political and social body. Thrift does not mean hoarding. It does not mean saving and sparing alone. It does not mean penuriousness and niggardliness. Thrift means a wise withdrawal of capital from unproductive uses and its diversion into channels of productivity. In other words, it is not thrift to save a dollar and secrete it in a teapot or an old sock. Thrift means saving the dollar and putting it to work by investing it in some project where it will yield safe and wholesome returns.

The United States is at present engaged in the tremendous task of organizing an army and a navy, transporting men 3,000 miles to a battle front, providing these men with food and guns and ammunition and helping feed our allies in the task of defeating the most sinister and malignant military force that ever sprang at the throat of civilization. Those chosen to direct this tremendous enterprise, the Government at Washington, need *your* dollar, and the Government is willing to pay a liberal rate of interest for the use of it.

Real thrift may be exercised by diverting to the Government's use in these critical times when thrift contributes so strongly to ultimate success. If the Government's promise to pay back at a liberal rate of interest is not good, neither is the money of the land worth anything. The Government, of which every man, woman and child of the land is a part, will use the money to thwart the unholy purposes of a hostile, conscienceless power that hid behind a veil of nauseous intrigue and plotted the conquest of the world by force of arms. Thrift on the part of the great American nation will pave the way to a universal understanding which will mean that peace shall reign in the world without danger of attack from the forces that would supplant it with the Right of Might.

Table of Contents

The Convention City........ 21
Patriotism and Building..... 26
Buttonhole Talks 30
Ceramists of New England Organize 30
Waste is Criminal........... 30
The Advantages of Clay Storage and the Description of a Successful Installation.. 32
Burning Caly Wares......... 34
Work of Sewer Pipe Manufacturers' Association...... 36
Increasing the Demand for Clay Products 38
Well Made Brick Invaluable for Buildings 40
T. B. McAvoy Meets the Final Summons 40
Well Known Southern Clayworker Passes Away...... 40
Let us Take Counsel........ 41
Monolithic Brick Pavement.. 42
A Plea for Concerted Road Construction 43
Road Work and War Work.. 43
Our Calendar Shower........ 44
Canadian Clayworkers to Gather at Toronto......... 44
Illinois Short Course Well Attended 45
Program of the Wisconsin Convention 45
Organization of the Central Ohio Section A. C. S...... 45
A Matter of Vital Importance to Every Clayworker...... 46
Official Announcement 48
N. B. M. A. Program........ 49

CORRESPONDENCE:

Brick News from Southern Indiana 31
New York and Vicinity...... 37
Heard in New England...... 37
Pacific Coast News.......... 47
We Should Say Not.......... 50
Veteran Brickmaker Retires 50
More About Pug Mills........ 50
Women Not Employed on Brick Plant Yet.......... 50
Storing Ice in Brick Kilns.. 50
Burning Brick with Pulverized Coal Fuel.......... 50
A National Association of Drain Tile Manufacturers 51
With Cincinnati Brick Men.. 72

EDITORIAL:

Current Comment 52
Four Tottering Walls........ 52
Convention Benefits 52
Pack Up Your Troubles...... 53
Saving Coal and Daylight.... 53
The New Equipment....... 53
Incomes and Profits......... 53
The Convention Season...... 53
Trade Literature 54
The Real Meaning of Thrift 54
Elitorial Notes and Clippings 59

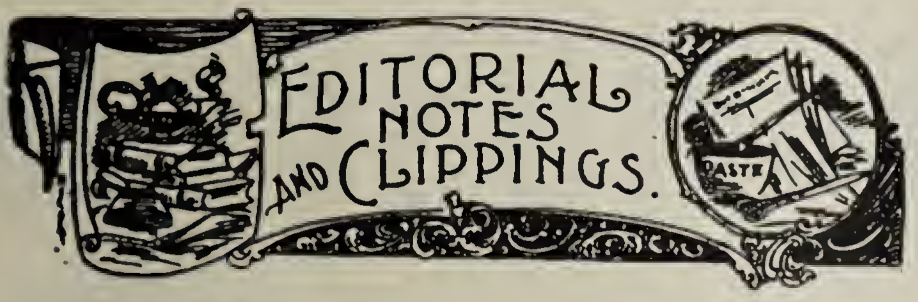
MISCELLANY:

Make Your Income Tax Returns 31
The Better Homes Shows.... 37
Guy E. Tripp Made Ordnance Executive 37
Study and Action............ 39
Life Insurance............... 41

INDEX TO ADVERTISEMENTS ON PAGE 74.

FOR SALE CHEAP.
A FATE Imperial Brick and Tile machine. Address LAKE,
11d Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on Pages 75, 76, 77 and 78.



EDITORIAL NOTES AND CLIPPINGS

The Laclede-Christy Co., of St. Louis, Mo., reports that 1917 was a banner year, with prospects very encouraging for 1918.

The Loogootee Brick and Tile Company, Loogootee, Ind., retired $10,000 preferred stock and increased its common stock from $40,000 to $50,000.

The Wyomissing Brick Company, of Reading, Pa., has purchased the paving brick plant of the Tidewater Paving Brick Company at Catskill, N. Y.

The Wellsville Fire Brick Co., Wellsville, Mo., has been incorporated with $100,000 capital stock; incorporators: W. J. Gilbert, G. A. Anderson, T. K. Shelby et al

The Kahn Brick Company, Selma, Ala., write that they contemplate erecting some down draft kilns, and would like to correspond with kiln builders who can furnish plans, etc.

Charles W. Focht, a brick manufacturer of Birmingham, Ala., died at his home in that city, from dropsy, January 5. Mr. Focht was sixty-two years old and had been in the brick business about fifteen years.

While arching a kiln at the Mexia (Texas) brick plant, J. P. Windsheimer was seriously injured and E. A. Fitzgerald was severely bruised about the face and body when they were caught under the kiln, which caved in on them.

The Standard Fire Brick Co., of Pueblo, Colo., has adopted a system of taking the waste heat from cooling kiln back to the boilers, where it will be used to heat the boilers. After the system is perfected, it will be patented by the company.

Great numbers of bricklayers have enlisted and others have been drafted for service in the United States army. One delegation of fifty was sent at one time from Des Moines, Iowa, to San Antonio, Texas, from which place they expect to be sent to France.

George Last, one of the pioneer brick manufacturers of West Jordan, Utah, died at his home in December. He was born in England in 1841. He came to America in 1872 and at once settled in West Jordan and engaged in the brick business. His widow survives.

The plant of the Jackson-Eagleton brick works was destroyed by fire in December, including all of the buildings and the machinery. Nothing was left but the office building. The loss is partly covered by insurance. It is thought the fire was caused by defective electric wiring.

At the recent annual meeting of the Gem Pressed Brick Co., of Quincy, Ill., the reports showed that the past year had been a very successful one. The following officers and directors were elected for the coming year: President, Ezra Best; vice-president, T. P. Castle; secretary and manager, John T. Hummert.

Fire, which originated in the dryer and threatened the destruction of the entire plant of the Shackelford Brick Company, Des Moines, Iowa, resulted in a loss of $50,000. Three of the immense buildings were burned to the ground. The buildings covered an area of four square blocks. The loss was entirely covered by insurance, and the plant will at once be rebuilt.

James S. McCann, formerly superintendent of the Streator Clay Company's plant at Streator, Ill., recently received his commission as First Lieutenant of Infantry in the Officers' Reserve Corps. Lieutenant McCann says, for a time at least, he will assume the role of an inactive member of the N. B. M. A., as he has received his commission in the United States army and hopes to be in foreign lands soon.

Frank A. Griley, son of F. L. Griley, of the Westwood Brick Company, of Cincinnati, Ohio, has just completed his ten weeks' course in radio training at the University of Washington, and will be sent to Harvard University to complete another three months' course in advanced radio. He enlisted last April. Frank has really been in business with his father ever since he was old enough to carry a brick, and each summer has been spent on the yard. He has been attending a clayworking school for two years past, but when his country called he was among the first to answer. All of the officials of the Westwood company are proud of the boy and of the company's service flag.

The Saginaw Paving Brick Company, Saginaw, Mich., has certified to a decrease in capital stock from $60,000 to $30,000.

The McGeary Fire Brick Company, of Pittsburg, Pa., has made application for a charter. Paul A. Stuart, Robert D. Skunk and I. M. Ryan are interested.

The clay storage bin of the Perrysburg (Ohio) Brick and Tile Company was destroyed by fire recently. The other buildings were saved by hard work on the part of the firemen.

The Chemical Clay Products Company, of Daisy, Tenn., has been incorporated with $50,000 capital stock. Those interested are B. Mifflin Hood, of Atlanta, Ga.; L. E. Hood, G. S. Keeling and G. W. Thomas.

The Bennettsville Brick Company, of Bennettsville, S. C., has been chartered with a capital stock of $25,000 to manufacture brick and other clay products. Those interested are: Lincoln S. Morrison, of Florence, S. C., and J. B. Morrison, of Marlboro, S. C.

Because of the delay in getting materials shipped, the work on the new plant of the Acme Pressed Brick Company, at Denton, Texas, has been greatly hindered, but it is hoped to have the plant ready for operation now in a very short time. A. B. Kelley is manager.

The Blue Ridge Clay Products Company, of Philadelphia, Pa., has been incorporated to manufacture and sell press brick. The stockholders of the company are M. L. Gatchell, M. L. Rogers and Harry M. Davis, of Wilmington, Del. The company is capitalized at $250,000.

The Atlantic Terra Cotta Company, with headquarters at 1170 Broadway, New York, announces that they have added a fire brick department, so increasing their facilities for the production of refractories, and are now offering standard and special shape brick and blocks of any size in any quality and on short shipping dates.

The present plant at Stone City consists of six large calcine kilns, together with large overhead storage bins for receiving the raw clay from the mines. After treatment in the calcine kilns the product is moved to large storage bins, from which it is loaded into freight cars for shipment to various destinations throughout the country—the principal buyers being the zinc smelters in Kansas and Oklahoma.

I. S. Myers and associates have purchased the property of the Keller Brick Co., Akron, Ohio, consisting of 32 acres of ground and the buildings thereon, and plan extensive improvements. George White, for ten years superintendent of the Wadsworth Brick Co., will be general manager of the new company, and the following are its officers: O. A. Alspaugh, president ;I. S. Myers, vice-president, and N. J. Long, secretary and treasurer.

The large brick plant of the Clearfield Clay Working Company, of Clearfield, Pa., has been sold to men who are the principal owners of the Bickford Brick Manufacturing Company. The purchase price is said to have been $200,000. A. P. Perley, C. E. Peasley, H. T. Janney and James B. Graham, Williamsport capitalists, are now the owners of the greater part of the concern. The output of the plant will be changed from paving brick to firebrick.

Increased earnings, a promise that dividends will be continued until "unforeseen conditions arise," establishment of branch offices and supply yards in Boston, Pittsburg, Philadelphia, Cleveland and other cities, and the usual war difficulties are the high spots in the annual report made by the officers of the American Sewer Pipe Co., at their annual meeting in Pittsburg, Pa., recently. Gross income of $828,230 compared with $534,466 last year, and net of $255,595 with $207,000 the previous year.

The annual report of the Harbison-Walker Refractories Co. (Pa.) in part says: The annual report of the Harbison-Walker Refractories Company contains the following statement: "The abnormal conditions of business referred to in our letter of last year have not only carried through the present year, but in addition our plants have operated at a largely increased capacity. The earnings as shown are after estimated income and excess war taxes have been deducted, and your officers feel under all circumstances the showing made is satisfactory. Earnings for the year were $7,522,305, which, after deductions for various necessary expenditures, depreciation and dividends on preferred and common stock, leaves a surplus of $4,709,817. This amount added

(Continued on Page 62)

YOUR 1918 BUSINES

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Industry is calling for firebrick. Th
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Crops must be increased. Three bush
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MACHINERY COMPANY

HIO, U.S.A.

EDITORIAL NOTES AND CLIPPINGS—Continued.

to former surplus increases that item to $10,017,075, as at September 30, 1917."

The Audubon Clay Products Company has been incorporated to take over the plant of the Audubon (Iowa) Brick and Tile Company.

The Illinois Brick Company, Chicago, Ill., of which Wm. Schlake is president, recently acquired title to fourteen acres of land lying along the west shore of Lake Calumet.

The Standard Refractories Co., of Marietta, Pa., has recently purchased 327 acres of fire clay land near Wrightsville, Mo., where a large refractories plant will probably be erected. The company manufactures fire brick, which is in great demand for use in iron furnaces.

H. J. Zubler, of Breckenridge, Mich., writes that he is promoting a company at that place for the erection of a first-class plant for the manufacture of drain tile and hollow building tile, and would like to correspond with manufacturers of tile machinery, kiln builders, etc.

The foremen of the National Fireproofing Company's plant at Ottawa, Ill., tendered a farewell dinner to the superintendent of the plant, G. P. Fisher, who entered the Officers Training Camp at Chillicothe, Ohio, the first of January, and presented him with an Elgin wrist watch. R. A. Shipley, manager of the National plant at Hobart, Ind., will take charge of the Ottawa plant temporarily.

The B. Mifflin Hood Brick Company, Atlanta, Ga., is one of the many clay working concerns that is running on government work. At the present time this company is delivering on 1,000 car loads of tile rings, blocks, brick and patented specials being used in the manufacture of high explosives. However, Mr. Hood is looking forward to meeting his friends at Indianapolis during the coming N. B. M. A. convention.

Workmen at the Brazil Hollow Brick and Tile Company's plant honored Thomas H. McCrea, president of the company, by presenting him with a beautiful gold chain and Knight Templar emblem. The presentation speech was made by Alvie Johnson, one of the workers, and was responded to by Mr. McCrea. A 100 per cent. Red Cross flag now flies at the plant, Mr. McCrea having presented every employe of the factory with a membership in the society.

H. E. Bunce, who had the contract for the paving of East State street, Orleans, N. Y., did the job with hot bricks. The bricks were furnished by the Alleghany Valley Brick Company, whose kilns are just outside the city limits. The demand for brick taxed the capacity of the factory and the bricks were taken from the kiln before they had a chance to cool, and delivered after a short haul to the place where the paving was in progress. The bricks from the center of the load were almost too hot to handle.

A fire that started on the roof of a small building holding fuel oil tanks at the sewer pipe plant of the W. S. Dickey Clay Manufacturing Company, Kansas City, Mo., resulted in a loss of 20,000 gallons of fuel oil and destruction of part of the structure containing the oil tanks. The sewer pipe division of the Dickey company is in the heart of large switching yards. It is thought that sparks from a passing switch engine started the fire. Walter S. Dickey, president of the company, estimated the loss would be between $5,000 and $7,000.

A. E. Hilder, manager of the clay products department of the Reliance Investment and Developing Company, of Winnipeg, Canada, writes that they are now engaged in building their new plant at Winnipeg, which they hope to have completed by early spring. They will manufacture building brick at the start, but later on expect to turn out a full line of clay products, including face brick, hollow building block, paving brick and sewer pipe, as they have shale of an unusually fine quality in great abundance. The company owns a large tract of land in Winnipeg on which they will build brick residences. As the name implies the company will devote a large part of its capital to developing property and selling houses, the brick for which will be made at the company's plant.

VALUABLE CLAY DEPOSITS IN LOUISIANA.

The clays of Louisiana have not received a great deal of attention for two reasons. As the principal industry of Louisiana is agriculture, the demand for clay products within the State has not been great; furthermore, most of the local needs for structural material have been supplied by its large and valuable timber resources. Some structural materials have been manufactured from clay in the vicinity of some of the large cities, but Louisiana in 1915 produced a little less than 0.25 per cent. (in value) of the total clay products of the United States.

In a paper entitled "Louisiana Clays," by George C. Matson, just issued as Bulletin 660-E of the United States Geological Survey, Department of the Interior, clays obtained in each of the principal geologic formations of the State are described, and the results of tests made by the Bureau of Standards are given. The paper shows that there are in Louisiana considerable deposits of clay suitable for making common brick, drain tile, hollow brick and the simpler shapes of fireproofing.

A copy of this paper may be obtained by addressing a request for it to the Director, U. S. Geological Survey, Washington, D. C.

COLORADO COMPANY TO PRODUCE CALCINED CLAY.

The Pueblo Clay Products Co. is a new concern recently incorporated at Pueblo, Colo. J. D. Thomas is at the head of the concern.

This company has been formed to treat the clay at the mines of the Turkey Creek Stone, Clay and Gypsum Company, at Stone City. During the past year the industry was started on a small scale, but as soon as its product—calcined clay—was put on the market the unusual quality of the Pueblo product found a ready market that has grown faster than the capacity of the plant, which has lately been enlarged to a monthly capacity of 1,500 tons, and which is again undergoing enlargement calculated to afford a capacity of 2,000 tons output.

Calcine clay is used principally in the lining of retorts in zinc smelters where, in the smelting of ores, exceedingly high temperatures are developed. It is used also in the manufacture of crucibles and vessels which must withstand great heat.

The J. D. Fate Company will keep Open House Convention Week at The Claypool Hotel. Every Visiting Clayworker will be welcome at their Headquarters Room 818.

See ads on Pages 69 and 103.

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THE WORLD OVER
SCHURS
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Los Angeles, Cal.

NOTICE!
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BRICK MFRS.
FOR
QUICK BURNS
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AND USE
SCHURS
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TRADE B MARK

Barrett's PAVING PITCH

The Standard Paving Pitch

NOT every pitch is suitable for paving. Roofing-pitch, for example, would not do at all, although it looks much the same and contractors sometimes attempt to use it on the theory that it is the same thing.

A good paving-pitch will last as long as the pavement—that is to say, twenty or thirty years—and at the end of that time it will be exactly as good as new and fit to use once more in a new pavement if it were worth while to take it off the old blocks.

The Barrett Company has been manufacturing Paving Pitch for something like forty years. We can photograph almost any old pitch-filled pavement and be fairly certain that when we look it up we will find that the pitch in the joints is a Barrett product of a generation ago.

Contractors who use Barrett's Paving Pitch know that it does not bubble and boil over in the kettle. That means that it is free from water and the lighter oils. They find that it holds its heat well and is easily handled by unskilled labor. They find that when hot it is just the right consistency to flow easily into the joints and form a water-proof seal, without, on the other hand, being so liquid that it runs through to the gutters.

In short, they find that Barrett's Paving Pitch is made especially for their use with all their practical difficulties in mind.

The municipal engineer who specifies Barrett's Paving Pitch knows that he can identify the goods by the label on the job. He knows that he is getting a standard product with forty years of experience to back it up; he knows that it is the same material that has made good in lots of other pavements which he knows of elsewhere.

In preferring pitch to cement or sand, the municipal engineer knows that he will get a pavement where every joint is an *expansion-joint;* a pavement in which cracks, breaks, blow-outs are unknown and impossible; a pavement that will not expand and thrust the curbing out of line or damage tracks or manholes; a pavement, in short, that will always be a credit to his management.

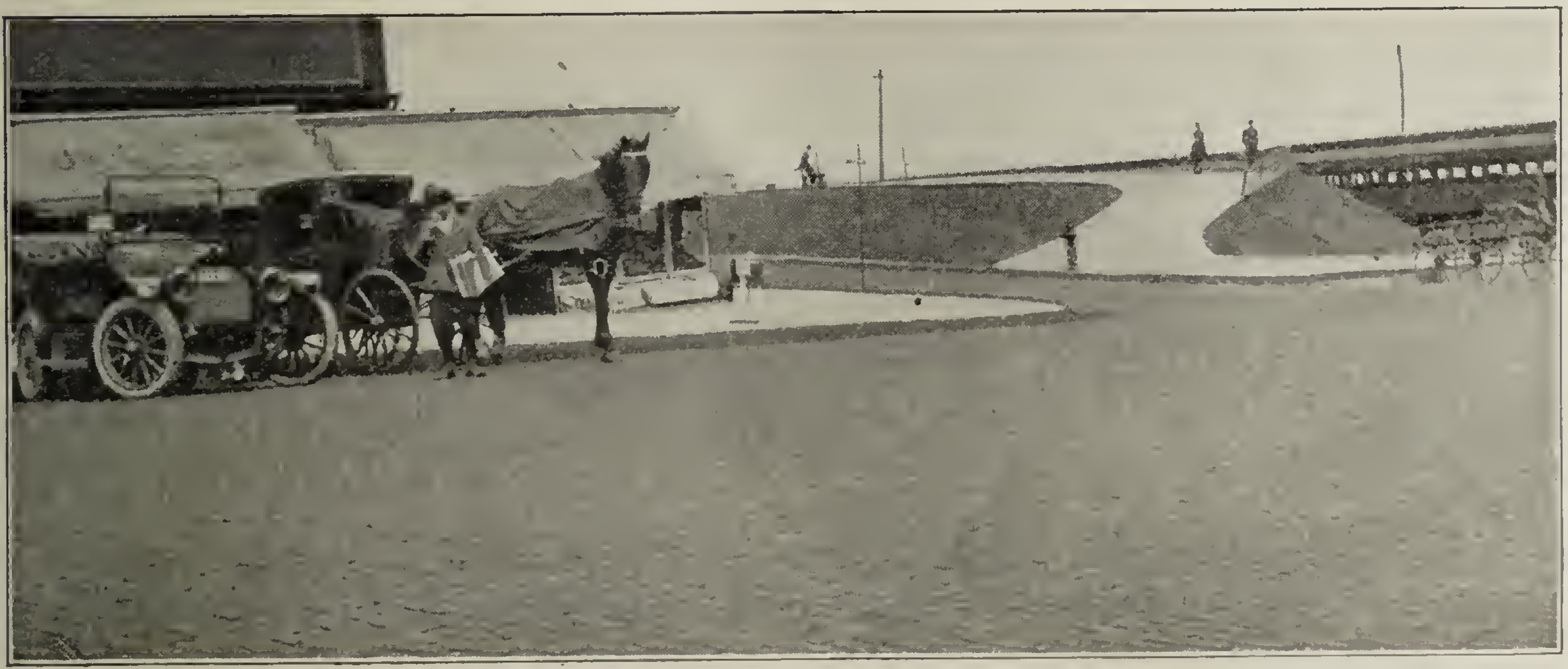
The standard pitch is Barrett's Paving Pitch. Look for the label on the barrels.

Booklets on request. Address our nearest office.

The Barrett Company

New York Chicago Philadelphia Boston St. Louis
Cleveland Cincinnati Pittsburgh Detroit Birmingham
Kansas City Minneapolis Nashville Salt Lake City Seattle Peoria
THE BARRETT CO., Limited: Montreal Toronto
Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

TRADE B MARK



Wisconsin Avenue, Milwaukee, Wisconsin. Brick pavement filled with Barrett's Paving Pitch.

THE ADVANTAGES OF CLAY STORAGE.

(Continued from page 33)

complishes several things, the storing of the clay being only a small part of the work.

The plant which uses this system is like the majority of clay working plants in segregated districts, i. e., it manufactures a wide variety of products, and is compelled to do so if one of the aims of the concern is a large production, as it is very apt to be where the margin of profit is small.

The climate is mild, and there are several rainy months in the winter. This means that building and construction work go on practically the year round, and the factories can operate through the wet season. Not running the year round would mean the carrying of a large stock of finished ware to supply the trade during these months, and this difficulty would be increased on account of the variable demand.

This installation takes care of the clays and grogs for mixing several bodies for the manufacture of architectural terra cotta, sewer pipe, face brick of several shades requiring different mixtures, fire brick, hand-molded refractory shapes, flue lining, partition tile, terra cotta chimney pipe, drain tile, roofing tile, and some special products with a total approximate yearly production of 50,000 burned tons.

The actual piling of the clay into the shed for storing, the supplying of clays to the bins for mixing, the compounding of the bodies and feeding of the three dry pans is accomplished by three men, and gives them, in addition, some time to take care of cleaning up, small pan repairs, and similar work.

The custom in several places where the clay is stored near the pans is to have seven pan-wheelers for two pans. This with no special mixing, and from small stock piles where the wheel is comparatively short. The shed in question is 360 feet by 75 feet, and in the fall is filled from one end to the other, so that it is easy to see what it would mean if pan-wheelers were used, particularly when every product requires a mixed body. If this clay was stored in piles, by hand, it would mean the use of two or three times as much area with correspondingly long wheels, on account of the inability to pile to the enormous height to which the clay can be piled with the overhead carriage and bucket. The amount of personal attention each wheeler would require to prevent errors in mixing, and the roundabout routes they would have to take to get the several clays would also increase the expense.

When this particular unit was put in operation the cost of handling of the clay to the dry pans was reduced about two-thirds over the old system. The real reason for the storage shed was to make it possible to run the year round, and have dry easy-grinding clay at all times. The system, then, not only made it possible to run the year round, but also make a big operating saving.

With labor conditions as they are in the East at the present time, an installation of this sort would represent a still greater saving in actual money, not considering the scarcity of men and delays from this cause.

Operation of the System. The clay is delivered to the shed by several methods, depending on the location of the pits, etc. The only requirement is that it be placed somewhere under the edge of the shed where the bucket can reach it to pick it up to deliver it to the storage piles. The bulk of the clay is mined with a steam shovel at the big clay bank, and loaded on four cubic yard capacity dump cars, and hauled down to the plant over a 3-foot gauge industrial railroad. Fig. 1 shows a general view of the plant from the direction of the clay bank. Bearing in mind that the clay storage shed, which is shown in the foreground, is 360 feet long, one can get an idea of the size of the plant. Also remember that three men handle the clay. Figure 2 shows a cross-section of the clay storage building. On the upper left is the trestle from which the clay is dumped down into the shed from the cars. The bucket then picks it up and puts it in a storage pile. Fig. 3 shows the trestle and shows the clay being dumped from the cars into the shed. Fig. 4 shows the bucket with a load of clay taken from the small

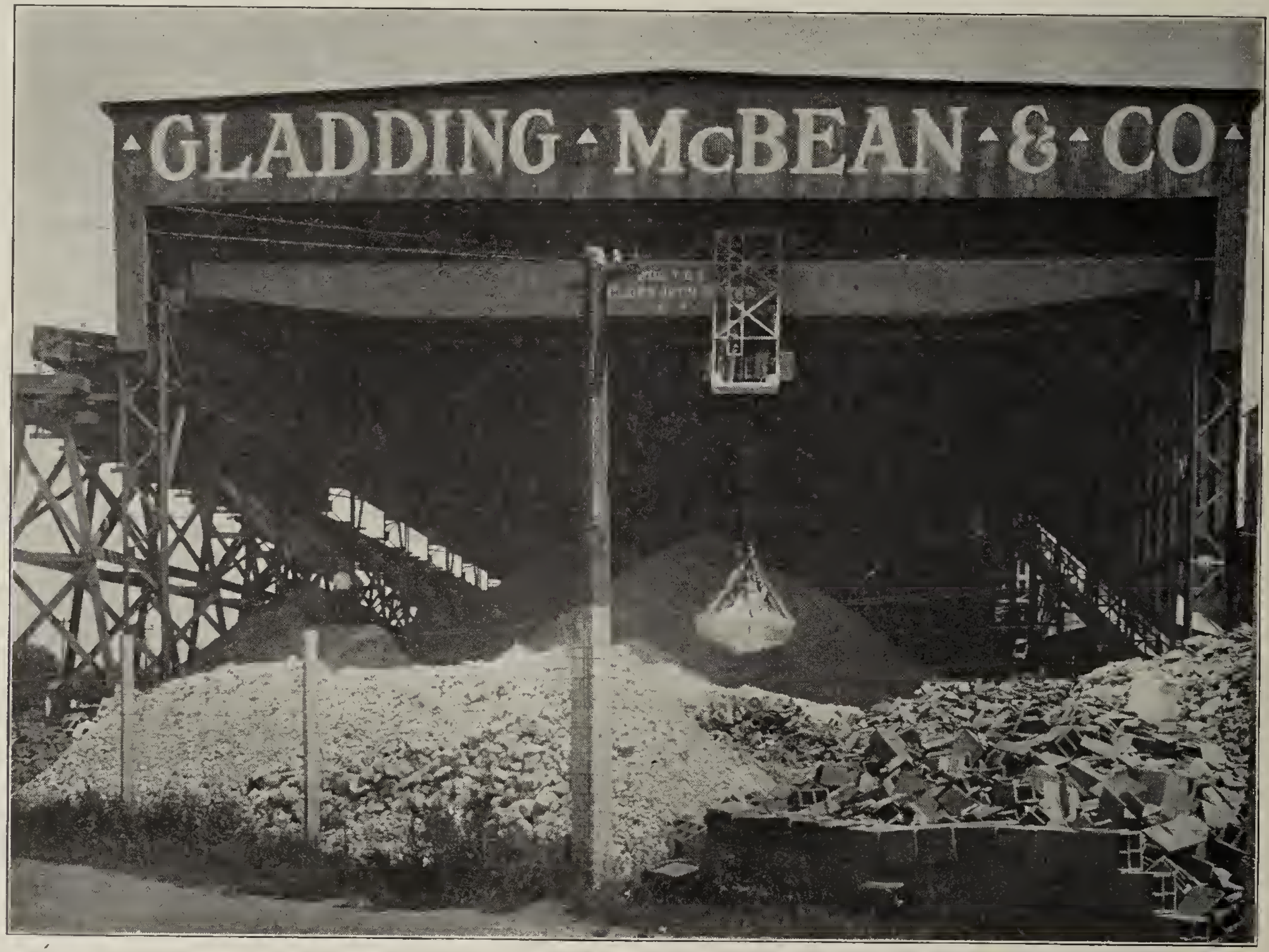


Figure 4.

(Continued on page 66)

If you had all of the COAL and all of the LABOR in this country at your disposal, you still could not afford to be without the

Underwood Patented Producer Gas Burning System

for burning clay products in periodic kilns.

You may consider this an extravagant statement but the fact remains that it behooves everyone engaged in the industry to conserve these two important resources and not permit profligate waste to obtain.

The Underwood System is economical from every viewpoint, but especially so in the matter of saving fuel and labor, as is well evidenced by those who have already installed it and which will be demonstrated in your case if you would just give us the chance to show you what we will do. May we not have this opportunity?

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Complete Line of Clay-Working Machinery.

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A warm welcome will be extended everyone calling on us at our headquarters at the forthcoming convention of the N. B. M. A., Room No. 744, Claypool Hotel.

THE ADVANTAGES OF CLAY STORAGE.

(Continued from Page 64)

pile which was dumped off the trestle. This clay is being taken to one of the large storage piles in the background. It is very easy to see from the cuts how flexible the arrangement is, and the enormous height to which the clay can be piled. By comparing the pile at the left which was dumped off the trestle, with the pile in the center which is still low compared with what it will be when filled out, one can get an idea of the volume of material that can be stored compared with what could be done if the clay was piled by use of wagons alone, or even what can be done compared with dumping off a trestle and leaving the clay there.

When the clay is to be used, it is picked off the storage pile and put into an overhead bin at the right, as shown in Fig. 2. There are series of these bins running along the side of the shed. Each one is slightly wider than the bucket so that it can be filled conveniently. Fig. 5 shows the open bucket in position over one of the bins. Note the arrangement of the operator's platform and how the bucket goes up beside him, using a minimum amount of head room and making it easy for him to see what he is doing. This work is done by the first of the three men mentioned.

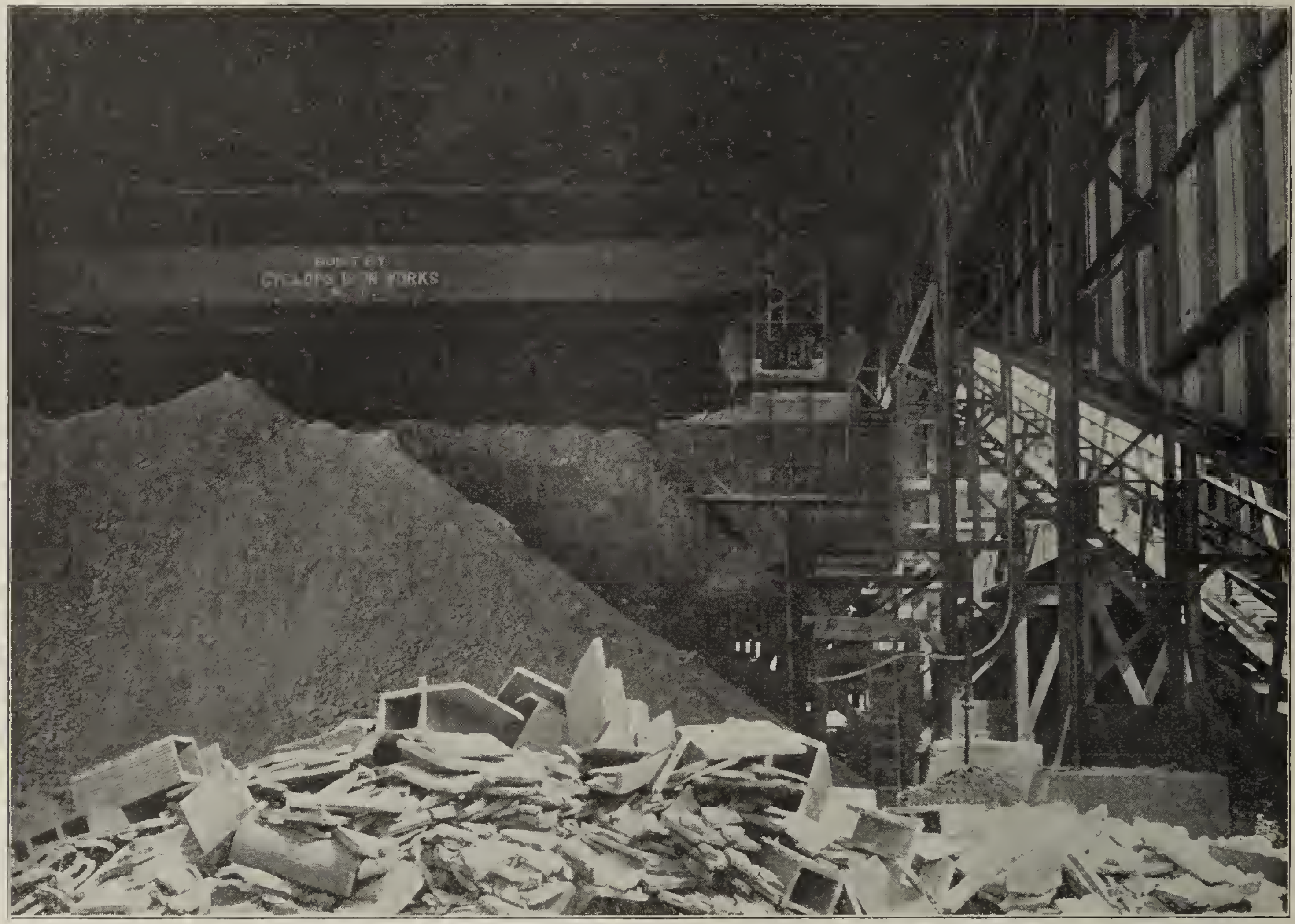


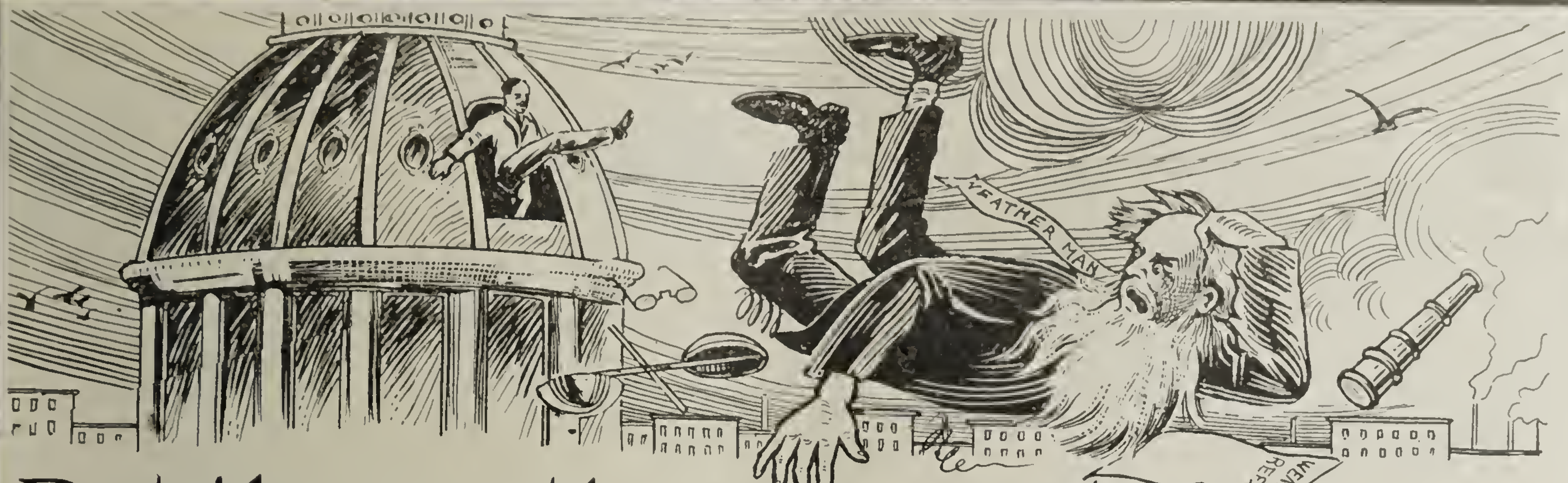
Fig. 5.

The grog bins are right beside the clay bins, as shown in Fig. 2. Fig. 6 shows the grog bins from the outside and the incline conveyor belt going to them. All the grog is collected near the gyratory crusher shown in the left foreground. As a rule the grog materials are left near the kilns from which they are drawn, and then hauled direct to the crusher in small dump carts so that there is comparatively little labor required to feed the crusher.

The crushed grog from the gyratory crusher dumps on the conveyor belt and is carried up the incline and dumped into any of the several storage bins, as desired. The dumping is done by use of a standard type two pulley tripper, which can be shoved along a track over any bin desired. This gives us the clay and grog in the overhead hopper bottom bins ready for body mixing.

This mixing is done in diaphragm, or measuring, cars which are electrically driven along a track under the hoppers of the supply bins. They are coupled together and operated as a unit. The operator rides on one side of the cars on a platform which runs the entire length of the cars. He has a controller rod which also runs the entire length of the cars so that he can throw the power on or off from any place he stands. The compartments can be made any size desired, so that the right amount of material can be used. It is not unusual to see the operator feeding three different pans, each one with a different body. To make this possible the two long mixing cars are used, so that all of the required sizes of compartments can be available without stopping to alter any between each charge. The compartments for one body are arranged so as to be close to each other, and the bottom dumping arrangement, as described below, is arranged in sections so that the entire bottom does not have to be opened up to discharge. Figure 7 shows the convenient arrangement of the car and spouts and the method of opening and closing the spouts. To make a charge, the operator runs his car along until the proper compartment is under the proper spout and fills the compartment level-full; then to the next, etc. Note the names of the material in each bin plainly printed over the operator's head, directly opposite each spout. These names are partially hidden behind the pipe in the cut. Also note the framed charts at the back of the car. These can be seen right under the left spout. They are attached to the car and are charts showing the composition of the different bodies, for the operator to refer to. The grog spouts are not shown in Fig. 7 as there are not as many grog bins as clay bins. Fig. 2 shows the way the spouts feed from grog bins to the mixing car. On account of the dryness and previous crushing of the grog, it runs through a small spout with comparative ease.

(To be continued.)



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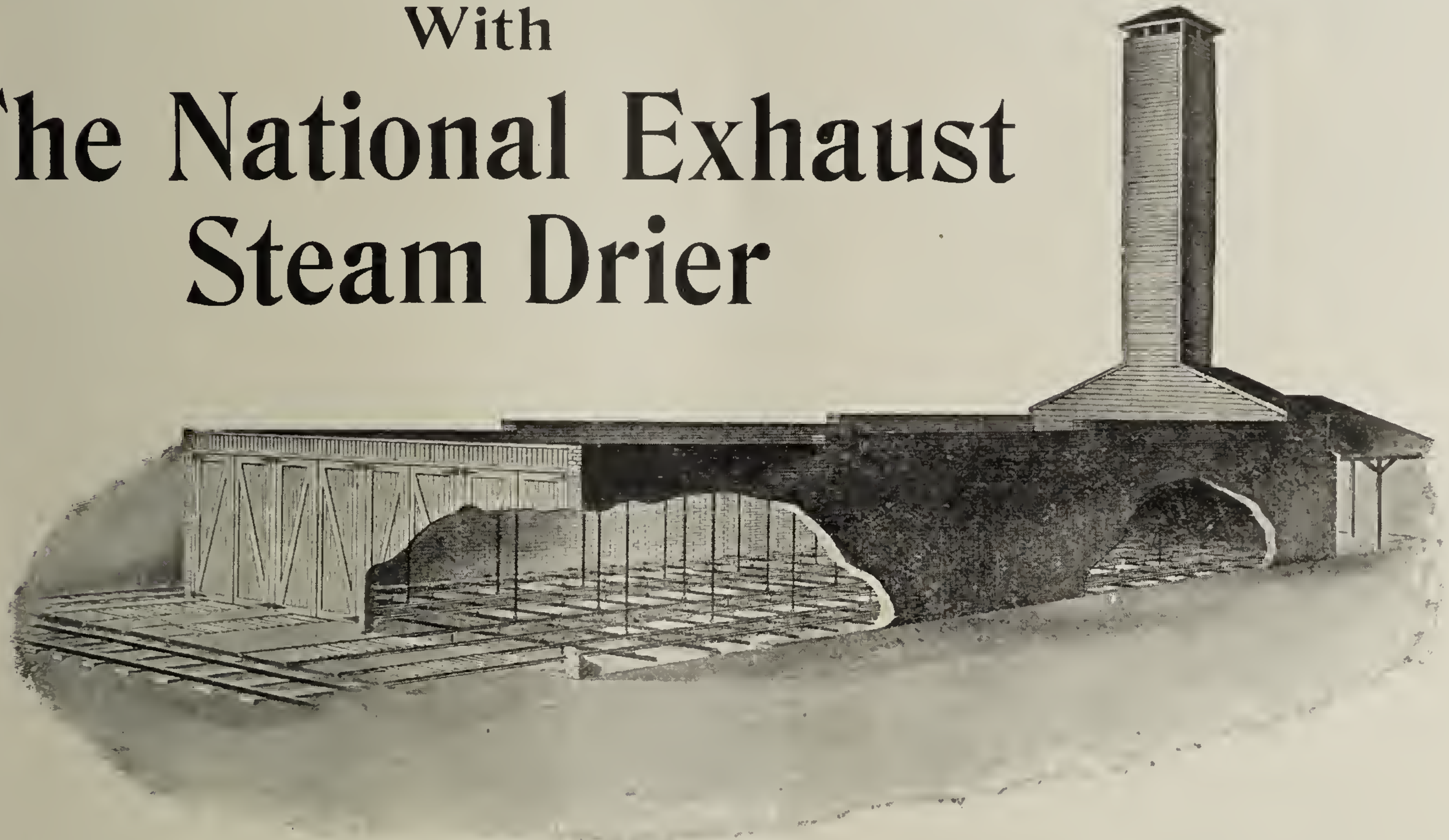

Many brickmakers have taken the bossing away from the weather man. If you have no National Brick Drier then you are not the boss of your own investment.

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All the important Federal Laws are published in this book.

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Written for THE CLAY-WORKER.

WITH CINCINNATI BRICK MEN.

THE NEW YEAR HAS COME, but it has not brought with it any material improvement for the clay men. The building industry is almost at a standstill here and the conditions at this time are not calculated to help matters in this way. Aside from the lack of interest, due to the uncertain situation, the weather has been very severe this winter, and the prevalence of snows and the low temperature, with the railroad situation, have all combined to make the lot of the clay men one that is not altogether to be envied.

Interest has been fostered, and, so far as is possible, caused, by the Builders' Exchange, but even this is not strong enough to overcome the natural opposition that has been so marked in the past few months. But the attitude of the manufacturers and dealers has been most commendable, and this is very encouraging. They are simply making the best of an unfortunate condition and are not only doing their best to make matters look better, but are still filled with a hope that the future will bring with it a more favorable turn in their affairs.

According to the annual windup of Building Commissioner Rendigs, in his annual report, which also includes his report for the month of December, there were fewer permits issued during the past year than usual. A comparative statement shows that in 1917 there were 12,175 permits issued, the cost of the buildings being $10,451,315. For 1916 there were issued 15,887 permits, totaling $10,842,895, and for the year 1915 there were 16,049 permits, amounting to $14,025,333. In December, 1917 there were 616 permits issued for buildings costing $188,333, and in the same month of 1916 there were 947 permits that totaled $998,345. He attributes the falling off in building to the high cost of materials, due to the war.

At the meeting of the Builders' Exchange some weeks ago, to stimulate the trade conditions and to arouse a wider interest in the building industry, it was given out that tight money had considerable to do with the present lack of activity. This was incorporated in a report that was made by Business Manager Frank Burnet, of the Exchange. From the reports given out at the meeting there will be ample supplies for the present year, with the exception of steel. It was also believed that the prices of materials would not decrease soon, and that while there were some unfavorable aspects to the situation, the indications did not offer any very discouraging phases.

A membership campaign is to be inaugurated by the officers of the Builders' Exchange this month, and this should arouse more interest, not only in the organization, but in the building situation as well.

The builders and real estate men of this city will be represented at the real estate and building exhibition given by the Builders' Exchange and Real Estate Board of Columbus, Ohio, January 21 to 30, at the State Fair Grounds. Three buildings, with 5,300 square feet, will be occupied, it is stated,

Plans have been prepared for the erection of a theater and office building, to cost about $500,000, on Sixth street, near Vine. The work of removing the old buildings has been nearly completed, and the new structure should be started before very long. It will be five stories high, of polychrome terra cotta, 120 by 188 feet in size. It will be known as the Palace Theater, and will be the largest theater in the city, having a seating capacity of 3,000. C. W. and George Rapp are the architects.

The J. A. Fay and Egan Co. will build a new manufacturing plant at Bond Hill, on ground purchased some time ago. Five hundred thousand dollars' worth of new mortgage bonds will be offered by the company to replace the present bonds, so that work of building the plant can be undertaken.

A large plant will be erected for the Greaves Machine Tool

Co., a new company, at Spring Grove Ave.and Monmouth St., the lot being 170 by 280 feet whereon the plant will be builded. Bausmith and Drainie are the architects for the building, and the initial structure will be 150 by 170 feet, a part of which will be two stories high, the remainder being of saw-tooth construction.

The election of John M. Stoner, of the Cincinnati Clay Products and Supply Co., as president of the Face Brick Dealers' Association was a compliment well deserved, as he has been an active worker in this branch of the clay industry. He was the founder of the Cincinnati Brick Club and is a hustler of the real type. H. Serkowich, who was made secretary, is also a hard worker for the association idea and is a man whose help will be productive of good. This is a double compliment for the Queen City, and, of course, it has been well received.

At the Builders' Brick Co. things are slow. Mr. Riggs is optimistic, however, and there will be an effort to boost the game whenever this is possible. It was unfortunate that D. R. Weaver, of this concern, lost his auto by theft. The car was left standing in front of his office and the theft was a daring one. There seems to be small hope of its being found.

Orders are piling up with the National Sales Co., but the serious question of delivery has been one of the dilemmas that has caused some annoyance here. Very little has been shipped out of late by the company, and it does not appear that conditions are going to be improved in this way very soon.

With the embargo on brick and other clay products so tightly drawn, the difficulty of making shipments has been a hardship on the dealers who have had anything to send by freight. This has been only another serious matter that has been added to the others.

There is little activity reported at the office of the D. E. Shorey Brick Co., and Mr. Shorey has been out of the city some of late.

Orders are not very plentiful with the Purcell-Grand Co., though a very nice one was placed recently for brick for a garage to be erected on Sycamore street.

Mr. Kopp, of the Cincinnati Clay Co., made a trip to his old home up state during the holidays. Orders are fair with this company for various clay lines, but the question of transportation is not always a simple one.

The Anders Shale Brick Co. has filed a petition in bankruptcy in the United States District Court. The application was made by Theodore Anders, president of the company, who states that the company can not pay its debts in full. The liabilities amount to $27,700 and the assets are placed at $24,215. These consist of real estate at the corner of Shadwell street and the C. & O. R. R. crossing, which is appraised at $20,460, and equipment in the plant at $2,755. The largest part of the indebtedness is due to local concerns and individuals. Among the larger creditors is the Hyde Park Lumber Co., with a claim for $5.000. This company manufactured shale brick.

The annual meeting of the Builders' Exchange will be held on January 14. It was postponed from earlier in the month. A new charter will be presented at this meeting which will provide for the creation of a board of control.

CINCY.

SHORT COURSE IN CERAMIC ENGINEERING, UNIVERSITY OF ILLINOIS.

In spite of adverse industrial conditions brought about by the war and severe weather conditions which interfered greatly with traveling facilities, the Short Course in Ceramic Engineering is entering upon the second week of its session, with a registration of 21 men, coming from 10 different states and representing 8 branches of the ceramic industries, including the manufacture of brick, sewer pipe, drain tile, glass, grinding wheels, terra cotta, and also including representatives of geological surveys and the general engineering firms.

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The Universal Explosive

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Wilmington, Delaware
POWDER MAKERS SINCE 1802

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INDEX TO ADVERTISERS

Alton Brick Co.......... 16
American Clay Machinery Co., The..........57, 58
American Process Co.......... 80
Anderson Foundry & Machine Works.......... 8
Atlas Car & Mfg. Co.......... 104
Arbuckle & Co,..........90, 91
Baird Machinery & Mfg. Co.......... 104
Ball Engine Co.......... 13
Barber-Greene Co.......... 60
Barr Clay Co., The.......... 16
Barrett Manufacturing Co.......... 63
Books for Clayworkers.......... 14
Bonnot Co., The..........
Boss, John C.......... 74
Brewer, H. & Co.......... 99
Brown Instrument Co., The.......... 67
Build With Brick.......... 94
Caldwell, W. E. & Co.......... 81
Cannelton Clay Products Co.......... 17
Carnell, George.......... 81
Ceraramic Supply & Const. Co.......... 84
Chambers Brothers Co..........18, 19
Chase Foundry & Mfg. Co.......... 104
Chattanooga Paint Co.......... 78
Chicago Brick Machinery Co,.......... 12
Chisholm, Boyd & White Co.......... 6
Claypool Hotel, The.......... 85
Clinton Paving Brick Co.......... 17
Danville Brick Co., The.......... 16
Didier-March Co.......... 88
Drying Clay Wares.......... 98
Dunlap Manufacturing Co.......... 81
Du Pont, E. I., & De Nemours Co. 73
Eagle Iron Works.......... 82
Eastern Machinery Co., The.......... 95
Engelhard, Charles.......... 79
Fate, J. D. Co., The..........69, 103
Frost Mfg. Co., The.......... 101
Freese, E. M. & Co.......... 100
Gandy Belting Co.......... 2
Geijsbeek Engineering Co.......... 82
Harrington & King Perforating Co.......... 4
Hoehne, Richard B. & Associates 9
Hydraulic Press Brick Co.......... 92
Illinois Brick Co.......... 93
International Clay Machinery Co..........80, 1
Klose, A.......... 79
Kushequa Brick Co.......... 16
Kushequa Keramic Co.......... 16
Lake Shore Shale Brick Co.......... 16
Lakewood Engineering Co.......... 104
Leary Mfg. Co., W. J.......... 15
Lovejoy, Ellis.......... 89
Manufacturers Equipment Co., The.......... 65
Marion Machine Foundry & Supply Co.......... 74
Mathews Gravity Carrier Co.......... 4
Mayer, C. P.......... 17
McAvoy Vitrified Brick Co.......... 16
Medal Paving Block Co.......... 16
Mentz Co., The G. B.......... 80
Metropolitan Paving Brick Co.......... 16
Mittler Wire Mfg. Co.......... 82
Morgan, F. W. & Co.......... 74
Murphysboro Paving Brick Co.......... 17
National Dry Kiln Co.......... 71
National Paving Brick Manufacturers' Association.......... 16
Ohio Galvanizing & Mfg. Co., The 81
Parker-Russell Mining & Mfg. Co. 78
Phillips & McLaren Co.......... 77
Potts, C. & A. Co..........70, 97
Purington Paving Brick Co.......... 17
Ricketson's Mineral Paint Wks. 74
Rodgers, L. E. Engineering Co.......... 5
Roessler-Hassslacher Chemical Co., The.......... 79
Scumming and Efflorescence.......... 82
Shawmut Vitrified Paving Brick Works.......... 16
South5rn Railway.......... 77
Standard Dry Kiln Co., The.......... 20
Steele, J. C. & Sons.......... 101
Taplin, Rice-Clerkin Co.......... 2
Terre Haute Vitrified Brick Co.......... 17
Thew Automatic Shovel Co..586. 68
Thwing Instrument Co.......... 81
Tile Underdrainage.......... 16
Toronto Foundry & Mach. Co.......... 80
Trautwein Dryer & Engineering Co.......... 11
Vitrified Paving Brick.......... 16
Wallace Mfg. Co.......... 96
Webster & Kincaid.......... 87
Westinghouse Elec. & Mfg. Co.......... 10
Williams, C. K. & Co.......... 78
Yates, Alfred.......... 78

SEE TABLE OF CONTENTS, PAGE 54.

ORIGINAL Boss SYSTEM **Drying and Burning** ORIGINAL Boss SYSTEM

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Use either waste heat or exhaust steam.
No live steam. No direct firing.

BOSS SYSTEM OF BURNING BRICK

Applies to all types of kilns and will save **HALF** in your cost of burning.

Let us save Time and Money for you

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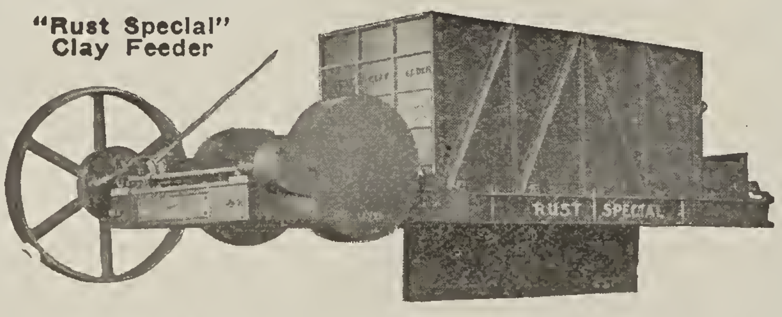

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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. LXIX. INDIANAPOLIS, IND., FEBRUARY, 1918. No. 2.

The N. B. M. A. Convention

The Thirty-second Annual Meeting of the National Association declared a glorious success by all participants. The deliberative sessions included many instructive papers and interesting discussions, and Hoosier hospitality proved true to tradition, leaving nothing to be desired.

DESPITE THE UNFAVORABLE CONDITIONS incident to war times, which were so serious that some of the old-time members suggested that no convention be held this winter, the Hoosier Convention was an exceedingly gratifying success. The Numerical Roster showed a total of 368. The ladies' roster totaled 54, which, together with those present and not registering, brought the total attendance to over 400. Those in attendance made up in enthusiasm what they lacked in numbers compared with previous meetings. An optimistic spirit of good fellowship prevailed and the trenches of the pessimists were taken by storm, as it were, by the N. B. N. A. regulars, without a single fatality. In the language of Cartoonist Powers, the "Joys" were everywhere, and the "Glooms" were no where visible, save one alone, and he, like the Arabs of old, folded his tent and silently stole away, early in the game.

Hon. W. C. Redfield, Secretary Department of Commerce, Washington, D. C., and Member of the Hoosier Reception Committee No. 205, W. N. Durbin, of Anderson, Ind., and Chas. H. Bryan, Detroit, Mich.

The militant spirit of the faithful was aroused to an unusual extent by the recent untruthful, uncalled for, unreasonable and unfriendly criticism of the Association and its executives, and, as a result, there was a unity of purpose to boost the Association and all lines of clay industries that was remarkable even in the ranks of the N. B. M. A., where harmony has always prevailed, and where the purpose has ever been to promote the best interests of every branch of clay work. As befits the times, the fighting spirit was rampant and measures were taken to enlarge the membership and extend the field of usefulness of the Association. So out of the mouths of our enemies came inspiration for greater efficiency. Thus, as so often occurs, what was meant to injure, boomeranged on the critics and will prove an added element of strength to the organization. Verily, as a wise man has said, "Knockers Never Win, Winners Never Knock!" We again inscribe on the tablet of the departed, "Requiscat in pace."

As has been said many, many times, the N. B. M. A. is an educational institution, and its deliberations are always marked by friendly social relations and incidents. The Hoosier convention was notable in these latter respects. From Monday until Saturday the Claypool Hotel was thronged with good fellows, who, while ready to jollify at any moment, never overlooked an opportunity to swap ideas and experiences in the various fields of endeavor, and so be the better prepared for the business problems that they must meet and solve, to protect and advance their trade during the seasons to come.

The Spirit of Patriotism.

The dominant spirit of the convention, both in the deliberative sessions and the social functions, was that of patriotism. At the first N. B. M. A. session, Chaplain Frank C. Huston, a noted Hoosier song writer and singer, led in singing "America," and afterward sang, "I Tried to Raise My Boy to Be a Hero." Dr. F. S. C. Wicks made a stirring address on "The Duty of the Hour," which will be given in full in the convention report, as will Mayor Charles W. Jewett's address, which was keyed high in patriotic fervor. Naturally the presence of Secretary Redfield, being a member of President Wilson's cabinet, accentuated the spirit of loyalty, which was voiced in the resolution adopted by rising vote and afterwards telegraphed to President Wilson, pledging the hearty support of the Association in all measures needed to win the war.

The A. C. S. Section Q.

Monday night's Section Q of the American Ceramic Society, under the direction of Ross C. Purdy, was a revelation to most of the participants, and the members in general were better acquainted and knew each other more intimately at the close of the meeting than they ever did before, a long cherished desideratum.

MEMBERS OF LOCAL ENTERTAINMENT COMMITTEE WHO

Robert Elliott, Sr.

James E. Randall.

George J. Potts.

The N. B. M. A. Smokerette Tuesday night was an innovation, the novelty of which seemed to delight all who participated. It was given with the compliments of the Local Committee, who made their initiative bow and proved themselves no mean entertainers. After the regular stunts there were a series of impromptu speeches and story telling matches followed by dancing, which was enjoyed by all of the young folks and some of the older ones.

The theater party at the Circle Wednesday evening proved a hit. It was a memory lesson in ancient history made unforgetable by the grace and beauty of Cleopatra, as portrayed by a modern artist and beauty model.

The N. B. M. A. Annual Dinner Thursday night was a fitting climax to all the social functions. The setting was beautiful. The picture of the happy participants was inspiring as was also the patriotic words of Secretary Redfield and the other orators who followed. The toasts must be read complete to be fully appreciated, so the reader must wait the appearance of the convention issue of The Clay-Worker. The clever wit of Toastmaster Bookwalter was of itself a rare treat and supplemented by excellent music and the melodious songs by Miss Collins, who charmed by her winsome ways no less than by her sweet voice, and the splendid rendition of his own patriotic songs by Chaplain Frank C. Huston. were features that the absentees can know only in imagination. That is their misfortune.

Entertainment Features.

One of the enjoyable episodes was the little dinner party given to Secretary Redfield and Dr. Stratton, director of the Bureau of Standards, Washington, Thursday noon, which was purely informal, but most enjoyable, as it afforded an opportunity for a close personal touch with these high government officials, and "to know them is to love them."

A pleasing incident not on the program was the presentation of a beautiful wrist watch to Miss Addie M. Wallace, the assistant secretary, by the visiting ladies, as an appreciation of her long and efficient service in the Association work.

The Ladies' Entertainment Committee proved equal to every opportunity, the visiting ladies being profuse in their gratitude for the courtesies paid them. The luncheon party Thursday noon at Geiger's new beautiful cafe proved particularly enjoyable. Music was furnished by Harpist Montani, a local celebrity, and Miss Collins sang a number of songs. It being Valentine Day, special favors appropriate to the occasion, were given to each guest, a sort of "sweets to the sweetest" affair. A surprise offering was a beautiful corsage bouquet for each lady which came with the compliments of Committeeman Minnick.

Visiting ladies were entertained with a theater party Friday afternoon, given by Mrs. Clayton Potts and Mrs. George J. Potts, of the Ladies' Entertainment Committee. It was a jolly party and occupied front row reats at Keith's vaudeville, and after the show they were escorted to Craig's Confectionery, where light refreshments were served.

A Unique Souvenir.

The souvenir de luxe of the convention was a Lady's Memory Tile, which was given with the compliments of the Local Entertainment Committee. It was a white tile 4x4 inches, framed neatly in mahogany, and is intended for use in connection with the telephone. It is a perpetual memoranda, as pencil marks can be wiped off with a moist cloth. The tile was made by the United States Encaustic Tile Works, finished with a matt glaze on which any ordinary lead pencil (not an indelible pencil) writes with a smoothness that is really surprising.

The Trade Missionaries.

The representatives of the machinery and supply firms were never before quite so comfortably cared for as at the Claypool. The entire eighth floor of the hotel was devoted to them and to the convention hall. On the wall opposite the elevator was an immense poster or floor directory, giving the name and room number of each firm represented, so that it was easy to locate any particular one desired. The various firms had banners, streamers and posters, the intent of which was to lure the visitor to their headquarters, where attractive exhibits of specimen ware, blue prints or sketches and printed matter was on display. Nearly every one had a souvenir of some sort, ranging from lead pencils and memorandum books to more pretentious gifts, which the visitors carried away as mementoes of the occasion. Needless to say, a warm welcome was extended to every delegate, our trade missionaries being adepts in glad-hand work.

EXERTED THEMSELVES TO MAKE OUR VISITORS HAPPY.

Robert C. Elliott, Jr.

James W. Hensley.

D. F. Billingsley.

An Element Overlooked by the Committee on Resolutions.

Even the "Weather Man" was for us convention week. After two months of the bitterest winter in Indiana within the memory of the oldest inhabitant, the weather moderated February 9, and during the week of the convention sunshine and balmy breezes, which made outdoor life a delight, prevailed. A resolution of thanks should have been tendered the "Weather Man" by the convention.

Election of Officers.

As is the custom, the Vice-Presidents were promoted in turn, First Vice-President Clippert taking the reins of authority from his pal, Fritz Salmen. The passing of the latter from the active list would be a source of regret but for the fact that his interest in the Association and its purposes will continue just as earnest as in the past. He takes pride in being succeeded by George H. Clippert, of Detroit, who is recognized by every one in the industry as a most efficient executive and a successful brick manufacturer. Such leaders are in themselves an inspiration. The new man on the Executive Committee, Third Vice-President W. A. Dunwody, of Macon, Ga., is acknowledged one of the most progressive manufacturers and "live wires" in the brick industry. He is a leader in his own territory and brings a wealth of practical knowledge and enthusiasm to the official family. All in all, the Hoosier convention is one of the most successful and satisfactory in the long history of the Association.

CONVENTION PERSONALS.

"Marse" John Sibley carries the banner for the Southland and is instantly selected as official representative of Dixie Land, no matter how many others may be present claiming to hail from "down south."

J. A. Glandon, vice-president of the A. P. Green Fire Brick Co., Mexico, Mo., was among the early ones on the job, his register number being 12. He says they manufacture fire brick and have enjoyed good business.

The most popular lady in attendance was Miss Blanche E. Kinner, secretary and assistant treasurer of the Dunn Wire-Cut-Lug Brick Co., Conneaut, Ohio, and who was on the job early every morning with a fresh supply of carnations to decorate old and young alike, with the compliments of this well-known and enterprising concern.

H. R. Mason, secretary-treasurer of the Monroeville (Ohio) Clay Products Co., has a faculty for realizing the many problems to be confronted in the clayworking industry. Then he pretends he wants to sell out and let others solve the problems. It is a safe bet, however that he enjoys wrestling with those same problems he pretends to be worried by.

B. L. Schultz, of the Waynesfield (Ohio) Drain Tile Co., enjoys dreaming about the ideal plant and the perfect system, but says he dreads the bumps which awaken him to the difference between seeing a vision and making a reality.

Lewistown, Mont., owes a vote of thanks to John Gretencort, manager of the Lewistown Brick and Tile Co., because he had no sooner breezed into headquarters and registered than he started right out to boost for his town. He had his pockets stuffed with illustrations showing attractive and interesting buildings that had been erected out there, and he was one of the few who had no complaints to make, but instead told of having had a splendid business in building brick and of the winter having treated them well out there instead of abusing them with unusually severe weather as was the case with so many others. He has been out in Montana for seven years now and is as great a booster for that country as if he had been born and raised there.

R. L. Clare, superintendent of the Federal Terra Cotta Co., with headquarters at 111 Broadway, New York, and factory at Woodbridge, N. J., got in a little late for the Ceramic dinner Monday evening, but he felt at home right away because he was joined by his sister, Miss Clare, who lives at Indianapolis. This, in a way, makes the Hoosier capital also his home town.

H. C. Hoover, of the Portland (Ind.) Drain Tile Co., takes a cheerful view of the outlook ahead and expresses the opinion that the whole clayworking industry will come into its own when we have peace again. In other words, he thinks there is a great future before every branch of the clayworking industry.

Wherever Jim Hoskins, of Terre Haute (Ind.), moved about among the crowd at the convention there was instantly something doing, and if things had been dull and quiet they immediately changed and took on the flavor of animation.

Jas. C. Campbell, of the Indiana Paving Brick and Block Co., Brazil, Ind., says they have their own coal, so they have been able to rumble right along and keep making clay products through the winter.

W. R. McKown, of the Brooklyn Brick Co., Greenfield and Indianapolis, Ind., says they have had fairly good business in tile and hollow block.

W. C. Mitchell, of the Cameron (Pa.) Clay Products Co., said they have had trouble with transportation, but otherwise business has been very good with them. Their plant has a daily capacity of 40,000.

Thos. Simpson, of Columbia, Tenn., was a bricklayer before he became a brickmaker and he has never been cured of it. He not only makes brick today, but he takes jobs and puts them in the walls, which, by the way, is one good way to help boost the building brick business.

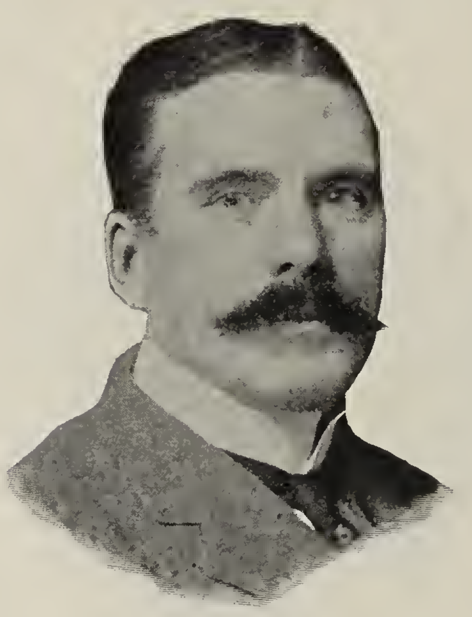
C. F. Hermann, of the U. S. Brick and Tile Co., Tell City, Ind., says they have had a very busy winter in tile, but have not been able to do much in brick because of transportation troubles. To solve his coal problem he is figuring on opening up a sort of family coal mine of their own on a small scale, as they have acquired property on which there is a vein of splendid coal.

"Bob" Elliott, of the Standard Dry Kiln Co., Indianapolis, was reported sick in the hospital, a report which he didn't feel inclined to stand for under existing conditions, so he got up and came in person to deny the rumor.

There is nothing either slow or backward about the Detroit brand of Bryans when it comes to patriotism and cooperating with the Government. C. H. Bryan, who is a member of the draft board in Detroit, contributed materially to the patriotic spirit at the convention.

A. R. Root, of Chambers Bros. Co., Philadelphia, Pa., who was among the early ones on the job, reports that the brick machinery business is doing fairly well with them, the largest demand for machines and equipment being from the fire brick interests, however.

R. G. Eisenhart, of the Consolidated Brick Co., Horseheads, N. Y., was one of the forehanded men in looking after fuel and operations this winter. He says they closed one plant and consolidated their efforts at the other to keep it going and were fortunate enough not to run out of fuel any time during the winter, though, of course, their operations were curtailed somewhat.



A. R. Root.

John C. Boss.

P. J. Bannon.

One of the ladies in attendance who keeps posted by reading The Clay-Worker perhaps more diligently than the average brickman, was Mrs. Julian T. Bramlett, of Enid, Miss. Mrs. Bramlett says she reads The Clay-Worker from cover to cover, ads and all.

D. W. Ewers, Angola Brick and Tile Co., Angola, Ind., says they operate a summer plant, consequently have been closed for the winter, but they had accumulated a stock and have been active selling tile. They have their stock of drain tile pretty well reduced now. They only make a few soft mud brick for their own use, and so far have confined their efforts to drain tile.

Jas. B. Oberly, who has brick yards at Wilmington, Del., with an annual capacity of 22,000,000, says that he has been able to dispose of practically his entire output to the home trade, not having shipped half a dozen carloads in a year. This is a splendid example of centralizing efforts and saving transportation by concentrating on the nearby trade first. He makes practically all his deliveries with teams and trucks, and now has three trucks operating, one five-ton and two three-ton trucks, all of which give splendid results.

G. B. Luckett, of the Crawfordsville (Ind.) Shale Brick Co., says they have had a very good year in brick and have been running their plant through the winter whenever they can get coal. The getting of coal has been quite a problem.

One of the incidental developments of the convention was the fact that the newly elected third vice-president, W. E. Dunwody, of the Standard Brick Co., Macon, Ga., is some song bird himself.

The "King of Ireland" was there—of course it would not have been a convention without him. They say he has a big government order for furnishing brick (the Irishman's weapon) to the allies. You know who we mean—J. J. Moroney, of the Chicago Brick Machinery Co., Chicago, Ill.

C. B. Sharer, sales manager of the American Clay Machinery Co., Bucyrus, Ohio, has some worth-while ideas in connection with the future possibilities for clayworking machinery in the export trade. He is not only giving thoughtful attention to the possibilities in the older countries when peace comes, but he has some well-founded, definite ideas about what we ought to do in connection with the possible needs of our Latin-American countries in the future.

James M. Hoskins.

R. L. Clare.

F. W. Wood.

There is a Post on Long Island and it carries a "Build With Brick" sign. It is Jotham Post, Glenhead, Long Island, who says that he used to explain that Long Island is near to New York, but he finds no cause to do that now, for it is now on the map in the minds of the people more than heretofore.

What would a convention be without that jolly bunch of men generally representing the Roessler-Hasslacher Chemical Co., of New York? W. Malsch, O. W. Will, A. C. Stephens, H. W. Smith and C. Dittman were here, there and everywhere, as usual.

James W. Hensley, of Indianapolis, was very busy on the local committee, but he found time to distribute some interesting blotters, graphically reminding one of his being in the machinery business.

That familiar figure, W. N. Durbin, represented his company, the Anderson Foundry and Machine Co., Anderson, Ind. Mr. Durbin was kept mighty busy extending the glad hand, but had time to receive Secretary Redfield and incidentally got into the limelight by having his picture taken.

One of the interesting demonstrations in refractory material was being given from time to time in the rooms of the Celite Products Co., of Chicago, who were demonstrating with a blow torch and a sample of fire brick the insulating qualities of their Celite product, which looks like fire brick, weighs about like a chalk brick, and has such resistance to the penetration of heat that when heated to a glowing red on one side will barely warm the hand through the thickness of a brick. The demonstrations were carried on by A. W. Knight and H. N. Haberstroh.

It was a busy time among the Potts of Indianapolis all convention week, and incidentally they have been having some busy times at their plant with some government orders as well as brick making machinery. They have been making some of the castings for the Liberty truck motors, and in this work it will be readily understood time is a matter of more than passing importance.

A. A. McClamrock, who directs the affairs of the Wallace Mfg. Co., Frankfort, Ind., came very near missing the convention, arriving too late to get on the final numerical roster. An important business engagement prevented his reaching Indianapolis until Friday. He was given number button 348. Those of his personal friends, who expected to see him at the convention and failed to do so, or any of the delegates desiring information relative to the Wallace pug mills, brick machinery, etc., are requested to drop him a line.

A. J. Bright of the Thew Automatic Shovel Co., Lorain, O., was detained entransit, but made up for lost time after arrival at Indianapolis. He found himself among friends, for many of the clayworkers present are users of Thew shovels and are always glad to say a good word for them.

Cecil A. Gardner of the American Enamel Brick and Tile Co., New York City, was among the late arrivals, but quickly made his presence felt after he had registered and was decorated with the number button. He likes the Hoosier capital, and was the last of the visitors to say good-bye, remaining in the city until Monday following the convention.

THE MOTOR TRUCK THE THING FOR SHORT HAULS.

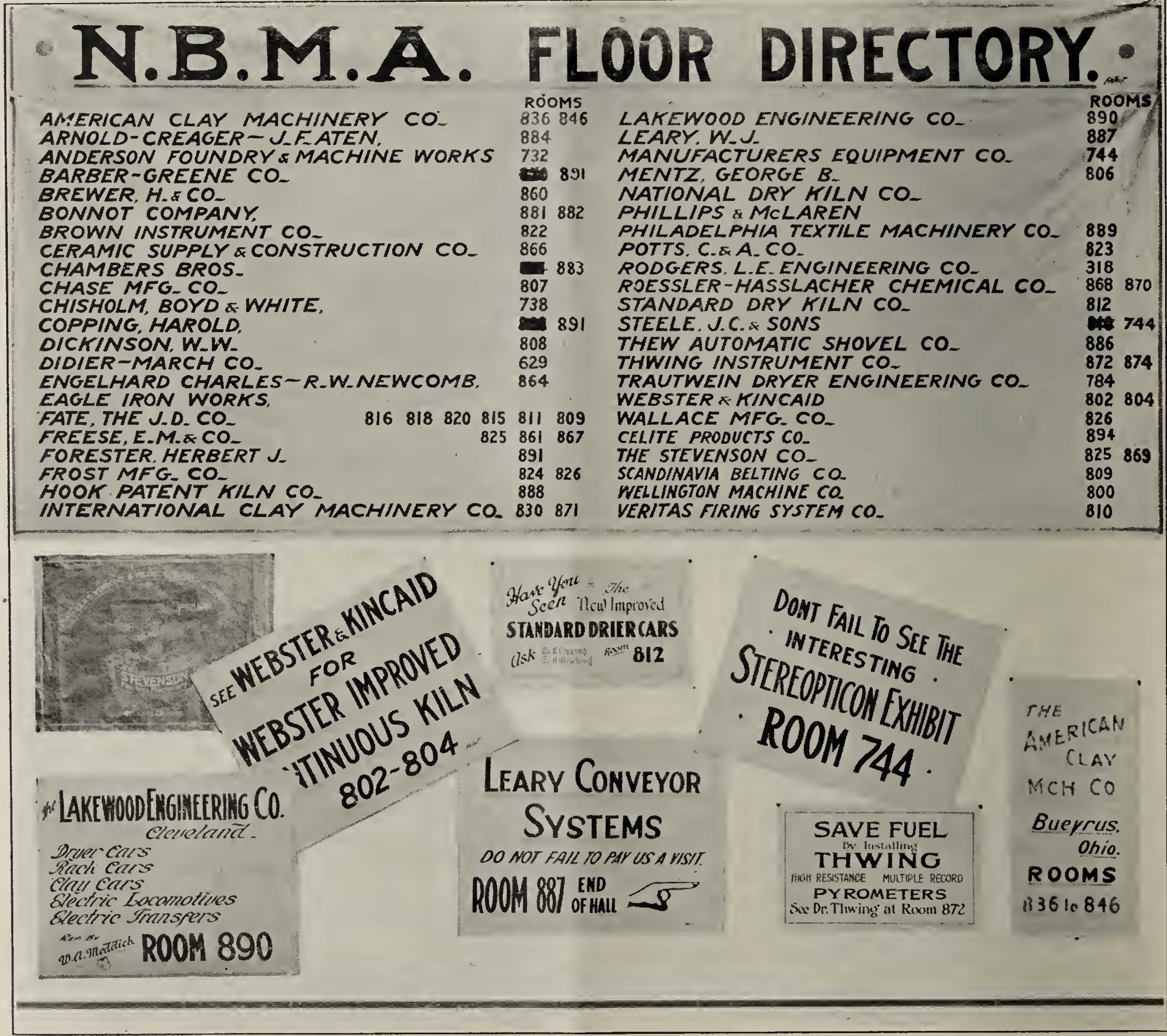
More impressive than ever before is the fact that clayworkers should avoid cross hauls and cultivate the nearby territory to shorten the transportation, and turn to motor trucks to help in making deliveries and relieving railway congestion. With good roads, motor truck deliveries are a practical economy up to 30 miles, and plainly we need more motor trucks in the trade and more cultivation of the nearby territory.

AMONG THE LIVE WIRES OF CONVENTION ANNEXERS.

THE machinery contingent was out in full force, and the machinery and supply men not only had reserved and made good use of all the rooms of the convention hall floor, but they overflowed this and some were down on the next floor, and a few were scattered here and there throughout the building. Taken altogether, they made one of the best showings ever made around a convention, and they did their part to put new life and spirit into those of the clayworking industry who were inclined to view the business outlook in a pessimistic light. They not only brought words of good cheer, but many interesting, worth while ideas and new offerings, especially of the kind calculated to make for greater fuel economy and labor saving around the clayworking plant. They came early and stayed late, they came in groups, and they came single-handed; they made up an important contingent of the gathering without which no N. B. M. A. annual would be complete.

The N. B. M. A. Floor Directory, facing the elevator on the convention floor, was a novel plan, giving the location of the various machinery and supply firm headquarters. Much comment was made upon this new idea, and it was so favorably received that no doubt it will be in vogue at all future conventions. The illustration below shows the directory and a few of the many display cards which, scattered over the entire eighth floor, made the annexers headquarters most attractive and inviting.

As usual, the largest group of machinery representatives was that of the American Clay Machinery Co., the most conspicious of whom were L. W. Penfield, Lambert Haigh, F. L. Hopley, Davis Brown, C. B. Sharer and H. L. Harmon. This enterprising group had a suite of rooms adjoining the entrance to the convention hall, ranging from Room 836 to 846. An immense room with two entrances was thrown open for reception and display purposes. A basket of daffodils adorned



N.B.M.A. FLOOR DIRECTORY.

	ROOMS		ROOMS
AMERICAN CLAY MACHINERY CO.	836 846	LAKEWOOD ENGINEERING CO.	890
ARNOLD-CREAGER—J. F. ATEN.	884	LEARY, W. J.	887
ANDERSON FOUNDRY & MACHINE WORKS	732	MANUFACTURERS EQUIPMENT CO.	744
BARBER-GREENE CO.	[redacted] 891	MENTZ, GEORGE B.	806
BREWER, H. & CO.	860	NATIONAL DRY KILN CO.	
BONNOT COMPANY.	881 882	PHILLIPS & McLAREN	
BROWN INSTRUMENT CO.	822	PHILADELPHIA TEXTILE MACHINERY CO.	889
CERAMIC SUPPLY & CONSTRUCTION CO.	866	POTTS, C. & A. CO.	823
CHAMBERS BROS.	[redacted] 883	RODGERS, L. E. ENGINEERING CO.	318
CHASE MFG. CO.	807	ROESSLER-HASSLACHER CHEMICAL CO.	868 870
CHISHOLM, BOYD & WHITE.	738	STANDARD DRY KILN CO.	812
COPPING, HAROLD.	[redacted] 891	STEELE, J. C. & SONS	[redacted] 744
DICKINSON, W. W.	808	THEW AUTOMATIC SHOVEL CO.	886
DIDIER-MARCH CO.	629	THWING INSTRUMENT CO.	872 874
ENGELHARD CHARLES—R. W. NEWCOMB.	864	TRAUTWEIN DRYER ENGINEERING CO.	784
EAGLE IRON WORKS.		WEBSTER & KINCAID	802 804
FATE, THE J. D. CO.	816 818 820 815 811 809	WALLACE MFG. CO.	826
FREESE, E. M. & CO.	825 861 867	CELITE PRODUCTS CO.	894
FORESTER, HERBERT J.	891	THE STEVENSON CO.	825 869
FROST MFG. CO.	824 826	SCANDINAVIA BELTING CO.	809
HOOK PATENT KILN CO.	888	WELLINGTON MACHINE CO.	800
INTERNATIONAL CLAY MACHINERY CO.	830 871	VERITAS FIRING SYSTEM CO.	810

SEE WEBSTER & KINCAID FOR WEBSTER IMPROVED 'TINUOUS KILN 802-804

Have You Seen The New Improved STANDARD DRIER CARS Ask Room 812

DONT FAIL TO SEE THE INTERESTING STEREOPTICON EXHIBIT ROOM 744

The LAKEWOOD ENGINEERING CO.
Cleveland.
Dryer Cars
Rack Cars
Clay Cars
Electric Locomotives
Electric Transfers
ROOM 890

LEARY CONVEYOR SYSTEMS
DO NOT FAIL TO PAY US A VISIT.
ROOM 887 END OF HALL

SAVE FUEL
By Installing
THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS
See Dr. Thwing at Room 872

THE AMERICAN CLAY MCH CO
Bueyrus, Ohio.
ROOMS
836 to 846

Miniature of the Floor Directory and Some of the Placards Which Met the Eye on Alighting from the Elevator at the Eighth Floor.

a small table in the center and comfortable chairs were placed about the rooms for the comfort of the visitors. A long row of tables was heavily laden with catalogues, bulletins, leaflets and literature on their large line of clayworking machinery. The walls were decorated with blueprints, drawings and illustrations of kilns, etc. On Lincoln's Birthday they had on display a large portrait of Lincoln, draped with American flags. From the beginning to the end of the week they kept open house, extended the glad hand and presented the delegates with attractive souvenirs. They always had a good word to say about business and some interesting ideas and offerings on tap.

The Dunn Wire-Cut Lug Brick Co., of Conneaut, Ohio, delegation consisted of F. B. Dunn, W. C. Perkins and W. T. Blackburn. As usual they handed out beautiful carnations to the visitors, and added much to the gaiety of the occasion. Of unusual interest was a chart they displayed in headquarters, showing the growth of the company by years. In July, 1910, they produced 2,225,800, while their 1917 business showed a total output of 175,077,431 wire-cut lug brick.

The E. M. Freese & Co., of Galion, Ohio, were represented by B. E. Place, E. M. Freese, H. H. Freese, E. L. Hess and G. R. Hess. They had a suite of rooms near the convention hall, where they kept open house. There was always a jolly crowd in their headquarters, where catalogs, blue prints and illustrations of their complete line of clayworking machinery and supplies was on display.

The Chambers Bros., Philadelphia, Pa., were represented by Mr. A. R. Root, who has an enviable record in the attendance of N. B. M. A. conventions. He and Secretary Randall are the only ones who have attended every convention. His firm is well known in the trade, and is one of the oldest advertisers in The Clay-Worker.

The Standard Dry Kiln Co., of Indianapolis, the concern of the "Book of Smiles" fame, had very busy representatives in Robert Elliott (senior and junior), and H. Wirsching. The Elliotts were on the local entertainment committee, and were much in evidence in making the visitors welcome to the Hoosier capital, but they took time to boost the Standard dry kiln.

The Manufacturers Equipment Co., Dayton, Ohio, had a little show of its own down in room 744, where they had chairs for visitors and over one hundred lantern slides with which they introduced J. T. Underwood, and showed many interesting clay plants with equipment installed by them. They listed the following representatives: J. L. Schroll, E. M. Malhmeister, W. A. Sachs, J. W. Worrall, I. M. Justice, J. T. Underwood, J. C. Wirick and H. A. Kramer. Many inquiries were received concerning their Underwood system, the Justice radiated dryer and other important products made by this company. They gave an attractive leather key-ring case as a souvenir.

The Bonnot Co., Canton, Ohio, was featuring a new hollow ware machine, their No. 17, with solid one-piece frame, which they believe is the most complete and up-to-date proposition for making hollow ware of various kinds within its limitations that has been turned out. This machine will work anything up to 13½x13½ flue lining, and it has machine cut steel gears which are arranged to run in oil. Also, while talking about gears, they do not overlook a chance to call attention to their herring bone type of gear for heavy duty, which has no back lash. The Bonnot Co. say they are having a pretty brisk demand for fire brick machinery. Also they are much interested in a powdered coal burner, which they are using in the steel mines and which they are experimenting with in connection with brick burning. If their experiments turn out as they expect, they may have something interesting to say to the trade on this subject soon.

The Didier March Co., of Metuchen, N. J., was ably represented by Louis A. Witte, who reported business good for his concern. Their continuous tunnel kiln has proven very successful.

G. S. Brubaker, of H. Brewer & Co., Tecumseh, Mich., when visited in his room on the convention floor of the hotel, said that while this is not an exciting season in brick machinery, broadly speaking, they have some fair inquiries and are perhaps doing as well as could be expected in the machinery line. The H. Brewer & Co. makes an excellent line of clayworking machinery.

The minute one stepped into the room of the Thwing Instrument Co. there was evidence of business doing because the "Sold" sign was on the job and enough interested people were making inquiries to indicate an awakened interest in the subject of more definite knowledge and control of burning, which naturally meant orders for pyrometers. The company had on exhibition a complete line of pyrometers and recorders in actual operation. The entire outfit was sold to the Carter Brick Co., of Peoria, Ill., during the week.

One of the live wire couples among the consulting engineers for the industry was made up of H. Webster and W. B. Kincaid, of Cincinnati, constituting the firm of Webster & Kincaid, and featuring Webster's improved continuous kiln. Mr. Webster is an old-time brickmaker, with large experience in plants in England. Mr. Kincaid is well acquainted with the business, his father owning and operating a large plant. They believe they have a kiln which will revolutionize the clayworking industry.

The Ceramic Supply and Construction Co., Columbus, Ohio, is making a strong feature of the Richardson Rotavibra separator and the Richardson continuous gas kilns. Rotavibra is a coined word meaning rotating and vibrating. Mr. W. D. Richardson represented his company. Near his headquarters he had an attractive placard reading, "See Richardson for kilns, gas producers, screens, automatic feeders and draft gauges. The latest and best screen is the Richardson Rotavibra separator. Ask about it. The most scientific, the most practical, the most economical and efficient kiln for clay products is the Richardson continuous gas kiln, detailed drawings on exhibition in room 866."

Harold Copping, of Kankakee, Ill., representing the Barber-Greene Co., of Aurora, with a line of portable conveyors for the mechanical handling of materials, says he finds a very active interest in these offerings at the present time, and he believes that they are to do more than anything else in solving the problem of help at the clay plant, the coal yard and everywhere that material is to be handled. Their line of conveyors is mainly of the portable and less expensive type, which can be used for supplementing more elaborate systems of conveying as well as for places where the limited amount of work will not justify the elaborate installation. He feels like it ought to be a good year in their business, and, on the other hand, their conveyors ought to serve a mighty good purpose for the industry in the present shortage of labor.

One of the interesting new things thoroughly in keeping with the spirit of the times being shown was found in the form of blueprints in the rooms of the Frost Manuafacturing Co. It was the Johnson Automatic Shovel, designed and developed by C. S. Johnson, of this concern, who has had considerable experience in electrical lines, and also with steam shovels. This new shovel offering as shown by the blueprints which adorned the walls had many unique and interesting features, both of adaptability and mechanical detail. In the first place, in its general design, it is adapted to either of three forms of power, to steam drive, to electric drive and gasoline; that is, it is so designed that either method of power can be used with the same standard form of construction apart from the power equipment itself. It is not, however, a steam shovel of the old type so modified as to make practical the application of other power. It is a new shovel proposition through and through, designed along original lines and embodying some of the ideas of autmobile construction modified, and the use of pneumatic control, but with interesting automatic features. It is not practical to give a comprehensive review of the featured parts of this new offering in a brief sketch of this kind, but presumably the Frost Manufacturing Co. will soon be in a position to illustrate and describe it in more detail for those interested. The Frost dry pans and boilers have made the company well known for durability and service of product.

Perhaps the most interesting feature of the showing in the rooms of the J. D. Fate Co., of Plymouth, Ohio, was that of the Plymouth gasoline locomotive, which marks a distinct step forward in the progress of industrial locomotives. This fact is emphasized and arouses particular interest these days because of the scarcity and high price of coal and the extra burden in tonnage and man power required to operate steam locomotives. The gasoline locomotive not only cuts out the coal problem, but it reduces the requirement in skilled help, lessens the dead weight tonnage of motive power and contributes materially to efficiency and economy all around. As a natural result they are busy these days on orders for these locomotives. The company was represented by H. Sykes, Henry Votaw, J. F. Chambers and P. S. Willett, all of whom spent a busy week renewing old friendships, forming new ones and handing out cartridge pencils as souvenirs. The room was large and afforded ample space for the hundreds of illustrations displayed on

F. B. Dunn.

J. W. Arbuckle.

J. W. Lazear.

L. W. Penfield.

H. O. Steele.

Stephen Kelley.

Some
of the
Live Wires

John J. Moroney.

Ever Present
Convention
Week

the walls of successful installations, their large line of clay-working equipment and various supplies.

The interests of the Philadelphia Textile Machinery Co., of Philadelphia, were well taken care of by R. O. Keiser.

The Main Belting Co., represented by S. C. Haines, had no difficulty in making known the merits of their product.

The Chase Foundry and Manufacturing Co., of Columbus, Ohio, was represented by A. J. Dunn, who reported business good and pronounced the convention the best ever.

Herbert Forester, of the Veritas Firing System Co., enlivened every crowd he was with with his good humor and hearty expressions of pleasure in meeting his old friends.

E. S. Newcomb, representing Chas. Engelhard, New York, the Heraeus LeChatelier pyrometer man, reports business fair with them. He spent a busy week, and the smile that won't come off indicated that orders had been secured.

Ira A. Minnick.

The International Clay Machinery Co. was conspicuously on the job, with five representatives present. They were there to impress the fact that they make complete outfits of brickmaking for all three methods, dry press, stiff mud and soft mud. And right now they are especially pushing the idea of drying and burning with producer gas. Their rooms were well equipped with blueprint plans, pictures of installations, models of presses and kilns and a number of the special machines and appliances they are featuring. Their representatives were Frank Elliott, Mortimer Silverman, R. C. McElroy, George H. Anderson and Dan Downey.

Otto was there with a box of cigarettes, that otto smoke, but they didn't because their contents were made of a clay-like substance. "Otto" is the middle name of J. O. Trautwein, who represented his company, the J. O. Trautwein Engineering Co., Chicago. He has made quite a name for himself through his ceramic engineering work. His kilns and dryers are popular.

The Buckeye Traction Ditcher Co., of Findlay, Ohio, was represented by L. E. Taylor. His company is doing quite a business in the clay industry, furnishing their ditching machine for the digging of clay. In these days of great crop production, the Buckeye traction ditcher will fill a long-felt want in supplying the means of ditching for tile underdrainage.

L. E. Rodgers' genial smile bespoke the prosperous times of the L. E. Rodgers Engineering Co., Chicago. He has built a number of large, fine plants during the last season.

John C. Boss, of Elkhart, Ind., pleasant, smiling and always there with a warm hand of good fellowship, must be doing a splendid business installing the Boss system these days, from general appearances.

Mr. T. A. Klinefelter, of the Westinghouse Electric and Manufacturing Co., was on the job early and late. This company has been furnishing the electrical equipment for hundreds of clayworking plants, wherein you will find satisfied customers.

W. A. Meddick, assistant sales manager of the industrial car department of the Lakewood Engineering Co., says that they are actively pushing labor-saving devices these days because it is essential to economize in labor and use mechanical power and means for transportation wherever practical. He says they have had more inquiries for their electric transfers than ever before. They have some very interesting offerings in electric locomotives, both of the storage battery and the trolley type.

L. E. Rodgers.

The Brown Instrument Co., Philadelphia, Pa., was represented by G. W. Keller, of Philadelphia, and J. W. Lazear, of Chicago. They report business fairly good and say that the clayworkers have realized as never before the importance of definite knowledge and better control of burning temperatures, and this is helping business in pyrometers and other instruments of this class. They displayed in their rooms their continuous chart records of single and multiple types and their instruments in actual operation, from an electric furnace showing approximate kiln temperatures and how the indicator may be used by the burner and how the record may be installed in the superintendent's office a mile away if necessary to check every variation in the heating of the kiln. By a study of the kiln temperatures you can probably shorten the kiln burn 12, 24 hours or more and get equally as good ware with same per cent. of firsts. By the actual results obtained from the use of pyrometers it is a positive fact that you can increase the amount of good ware from every kiln, with a great amount of saving in coal.

R. L. Frink, of the Frink Pyrometer Co., was on the job early, and had no trouble button-holing the ceramists.

J. C. Steele & Sons Co., of Statesville, S. C., sent the southern breezes to the convention in the hands of H. O. Steele, who always "leaves them smiling when he says goodbye."

The Chisholm, Boyd & White Co., Chicago, manufacturers of the Boyd press and dry pans, held forth in room 738, where L. W. Flood greeted the visitors and told of the many merits of their products.

W. G. Stevenson and Thomas A. Hibbins were there with bells on for the Stevenson Co., Wellsville, Ohio. Their sales of clayworking machinery and equipment have been good, and they are optimistic regarding the future.

The Wellington Machine Co. was specializing in boosting triple rack dryers, but they were also calling attention to the fact that they supply a full line of brick machinery and all yard supplies. Mr. D. J. Strickland represented not only this company, but also the Strickland Automatic Brick Machine Co., of Cleveland, O., which is placing a machine on the market that will be described later in The Clay-Worker.

The Pierce Co., of Kansas City, Mo., which is featuring metal doors and frames for silos built of clay block and brick, was represented by C. E. Meyers, who says they are advocates of better construction in silos and supply a good line of silo accessories, including doors, frames, reinforcing material, metal roofs, etc.

The Scandinavia Belting Co. was represented from the Cleveland (Ohio) branch by E. W. Kingsbury, branch manager, and J. M. Hallisy. This is a fabric belt made in England, but has ten branches in this country, which they claim is "different." It is solid woven and not made up in plies, and they are finding much satisfactory use for it, especially for conveying purposes in the clayworking industry, in coal handling and handling of crushed stone and other heavy and hard wearing products. They carry the best in stock up to 36 inches wide, and they make it to order any width or length desired.

The Arnold-Creager Co., New London, Ohio, was featuring in its printed matter the S. S. S. Special Automatic Brick Machine, which they have designed as a new and distinct contribution to labor saving and increasing capacity. The machine is designed to automatically strike off, bump and dump the moulds and deliver the pallets of brick to a conveyor or brick table, from which they can be loaded on cars or trucks, then put the empty mould into the sander, where it is properly sanded and brought back into the machine to be refilled. In other words, it is a machine in which they have sought to reduce the labor requirement to the smallest possible denominator, while at the same time increasing capacity and improving the product and the system generally.

W. J. Leary, of the W. J. Leary Manufacturing Co., Buffalo, N. Y., has some theories about labor efficiency and economy through the installation of conveyor systems that are very broad in scope and very comprehensive in detail, and completely in harmony with the spirit of the times. He has some distinctive ideas about automatic conveying, which include co-ordinating systems and the use of electric transmission and a variety of speeds for a wide range of control to adapt the system to circumstances that change from time to time. Electric transmission for conveyors is a sort of hobby with Mr. Leary, because he regards this as the ideal form of transmission, and the best form with which to exercise that thorough control which is a strong feature in the work. He uses electric buttons for stopping and starting and five different speed controls so as to vary the speeds with the number of men or the needs of the occasion. Mr. Leary has a brick machine well worth careful consideration.

WITH THE SOUVENIR DISPENSERS.

There was rich picking for the souvenir sharks among the machinery and supply people in attendance at the convention for apparently neither the war nor dull times effected any curtailment in the expenditure of the advertising departments for interesting and valuable souvenirs to be distributed among members of the trade. There were pocketbooks, notebooks, pencils, fancy and plain, and many things to delight the eye of the collector and to serve as reminders of the donor for the coming year.

The Bonnot Co., Canton, Ohio, which has acquired the pocketbook habit, evidently feels that the users of its machinery will make money, war or no war. Also notwithstanding prices, they have kept up the quality and the new pocketbook passed out by them this year was even more highly appreciated than heretofore because it is a sample of the real thing in this day of many substitutes. In addition to this they had a real leather bound diary, which was a fit companion for the pocketbook.

The International Clay Machinery Co., of Dayton, Ohio, extended itself on the pencil idea and distributed those patent redipoint novelty pencils with the company's compliments. The redipoint novelty pencil is a first cousin to a fountain pen.

The American Clay Machinery Co. handed out a splendid leather bound diary together with an everyday type of pencil, while meantime they distributed here, there and everywhere a number of handy blank books for making convention notes, with the compliments of the company, which were highly appreciated and quite generally used. A supply of six-foot folding rules was soon exhausted.

The Scandanavia Belting Co. "hit the mark" with one of those novelty pencils designed like a rifle cartridge which makes an interesting souvenir as well as a valuable pocket piece.

The Thwing Instrument Co., Philadelphia, Pa., distributed a leather-bound manual for engineers, it being the twentieth edition of a compilation by Chas. E. Ferris, B. S.. professor of mechanical engineering, University of Tennessee.

The Manufacturers' Equipment Co., Dayton, Ohio, handed out to visitors an elegant leather key ring holder that was much prized and eagerly sought after.

The local committee was responsible for a ladies' memory tile souvenir, the same being a framed slab or white tile made by the U. S. Encaustic Tile Works, of Indianapolis, and intended for use as a slate at the telephone or on which to mark down orders for the grocery man and other needs of the day, which markings can be readily removed with a moist cloth and a new start made. One of these was presented to and was received with appreciation by Secretary Redfield while at luncheon Wednesday.

The Book of Smiles, that unique publication of the Standard Dry Kiln Co., Indianapolis, was encountered here, there and everywhere around the convention and was never neglected.

The Stevenson Co., of Wellsville, O., gave a useful steel tape measure, of the type you press the button, the spring does the rest.

NUMERICAL ROSTER N. B. M. A., INDIANAPOLIS, 1918.

NAME. FIRM. TOWN.

1. FRITZ SALMEN, Salmen Brick & Lumber Co., Slidell, La.
2. W. W. DICKINSON, JR., Am. Br. & Tile Co., Little Rock, Ark.
3. G. H. CLIPPERT, G. H. Clippert & Bro. Br. Co., Detroit, Mich.
4. C. F. CLIPPERT, G. H. Clippert & Bro. Br. Co., Detroit, Mich.
5. F. B. DUNN, Dunn Wire-Cut-Lug Brick Co., Conneaut, O.
6. EBEN RODGERS, Alton Brick Co., Alton, Ill.
7. JAMES E. RANDALL, The Clay-Worker, Indianapolis, Ind.
8. C. P. MAYER, C. P. Mayer Brick Co., Bridgeville, Pa.
9. WM. D. GATES, Am. Terra Cotta & Ceramic Co., Chicago, Ill.
10. J. W. SIBLEY, So. Paving Br. Mfrs. Assn., Birmingham, Ala.
11. THEO. A. RANDALL, Secretary N. B. M. A., Indianapolis, Ind.
12. J. A. GLANDON, A. P. Green Fire Brick Co., Mexico, Mo.
13. H. G. LOVE, Dom. Fire Br. & Cl. Prod. Co., Moose Jaw, Can.,
14. W. C. PERKINS, Dunn Wire-Cut-Lug Br. Co., Conneaut, O.
15. W. T. BLACKBURN, Dunn Wire-Cut-Lug Br. Co., Paris, Ill.
16. W. D. RICHARDSON, Ceramic Sup. & Con. Co., Columbus, O.
17. W. A. MEDDICK, Lakewood Engineering Co., Cleveland, O.
18. C. B. THWING, Thwing Instrument Co., Philadelphia, Pa.
19. ALEX R. BATLEY, Ft. Scott, Kans.
20. D. F. BILLINGSLEY, T. A. Randall & Co., Indianapolis, Ind.
21. JAMES W. HENSLEY, Indianapolis, Ind.
22. FRANK W. WOOD, Danville Brick Co., Indianapolis, Ind.
23. GEORGE B. MENTZ, Walkill, N. Y.
24. ALBERT A. POTTS, Indianapolis, Ind.
25. THEO. B. RANDALL, The Clay-Worker, Indianapolis, Ind.
26. GEORGE M. FRIES, A. Fries & Sons, Connersville, Ind.
27. CHAS F. HERMANN, U. S. Brick Co., Tell City, Ind.
28. C. C. BLAIR, Metropolitan Paving Brick Co., Canton, O.
29. WILL P. BLAIR, National Pav. Br. Mfrs. Assn., Cleveland.
30. EDWIN G. ZORN, Kenfield-Leach Co., Chicago, Ill
31. W. S. ELTON, The Richland Tile Co., Richland, Ia.
32. H. N. HABERSTROH, Celite Products Co., Chicago, Ill.
33. A. W. KNIGHT, Celite Products Co., Chicago, Ill.
34. F. L. HIGGINS, Whiteacre-Greer Fireproofing Co., Chicago.
35. F. M. HARTFORD, JR., Penn. Clay Prod. Co., Pittsburgh, Pa.
36. R. N. LONG, Penn. Clay Products Co., Pittsburgh, Pa.
37. W. M. JACOBS, Pittsburgh Plate Glass Co., Charleroi, Pa.
38. G. M. RISACHER, Loogootee Br. & Tile Co., Loogootee, Ind.
39. C. C. BARR, Barr Clay Co., Streator, Ill.
40. JAS. R. THOMAS, Standard Brick Co., Crawfordsville, Ind.
41. EDWIN M. BROWN, Standard Br. Co., Crawfordsville, Ind.
42. LOUIS A. WITTE, Didier-March Co., Metuchen, N. J.
43. SPENCER M. DUTY, Medal Paving Brick Co., Cleveland, O.
44. ROSS C. PURDY, Norton Co., Worcester, Mass.
45. HENRY C. ADAMS, Indianapolis, Ind.
46. C. D. UNDERHILL, Underhill Br. & Tile Co., Rockport, Ind.
47. F. L. MANNING, Peebles Paving Brick Co., Portsmouth, O.
48. ELLIS LOVEJOY, Columbus, O.
49. F. H. RIDDLE, U. S. Bureau of Standards, Pittsburgh, Pa.
50. GEORGE J. POTTS, C. & A. Potts & Co., Indianapolis, Ind.
51. M. E. GREGORY, Br., Tile & Terra Cotta Co., Corning, N. Y.
52. CLAYTON POTTS, C. & A. Potts & Co., Indianapolis, Ind.
53. TIM BREEN, C. & A. Potts & Co., Indianapolis, Ind.
54. B. E. PLACE, E. M. Freese & Co., Galion, O.
55. H. F. PLACE, E. M. Freese & Co., Galion, O.
56. E. L. HESS, E. M. Freese & Co, Galion, O.
57. G. R. HESS, E. M. Freese & Co., Quincy, Ill.
58. F. G. BANKER, Brooklyn Brick Co., Indianapolis, Ind.
59. J. H. ZINN, Wm. E. Dee Mfg. Co., Indianapolis, Ind.
60. E. W. DAILEY, Shale Hill Brick & Tile Co., Chillicothe, Mo.
61. ROBERT WALKER, Amer. Sewer Pipe Co., Jackson, Mich.
62. CHESTER TREISCHELL, Gen. Elec. Co., Schenectady, N. Y.
63. S. C. LINBARGER, The Carborundum Co., Niagara Falls,N.Y.
64. R. R. DANIELSON, Benjamin Elec. Mfg. Co., Desplaines, Ill.
65. JOHN FOLGER, Indianapolis, Ind.
66. MORTIMER SILVERMAN, Inter. Clay Mach. Co., Dayton, O.
67. R. H. McELROY, International Clay Mach. Co., Dayton, O.
68. GEO. H. ANDERSON, Inter. Clay Mach. Co., Dayton, O.
69. A. R. ROOT, Chambers Bros. Co., Philadelphia, Pa.
70. R. C. ELLIOTT, The Standard Dry Kiln Co., Indianapolis, Ind.
71. M. C. BOOZE, U. S. Government, Columbus, Ohio.
72. ROBT. ELLIOTT, Standard Dry Kiln Co., Indianapolis, Ind.
73. JOHN W. REAGAN, Knoxville Brick Co., Knoxville, Tenn.
74. R. C. PENFIELD, American Clay Mach. Co., New York City.
75. L. W. PENFIELD, American Clay Mach. Co., Bucyrus, O.
76. R. O. PERROTT, American Clay Machinery Co., Bucyrus, O.
77. HAROLD PENFIELD, Amer. Clay Mach. Co., Bucyrus, O.

NAME. FIRM. TOWN.

78. PRESTON PENFIELD, Amer. Clay Mach. Co., Bucyrus, O.
79. C. B. SHARER, American Clay Machinery Co., Bucyrus, O.
80. DAVIS BROWN, American Clay Machinery Co., Bucyrus, O.
81. LAMBERT HAIGH, American Clay Mach. Co., Bucyrus, O.
82. F. L. HOPLEY, American Clay Machinery Co., Bucyrus, O.
83. H. L. HARMON, American Clay Machinery Co., Bucyrus, O.
84. JAS. P. MARTIN, American Clay Mach Co., Lancaster, Pa.
85. W. R. CUNNINGHAM, Amer. Clay Mach. Co., Bucyrus, O.
86. E. J. RUTLAND, American Clay Mach. Co., Chilhowie, Va.
87. E. J. SHAW, American Clay Machinery Co., Seattle, Wash.
88. C. P. MERTENS, American Clay Mach. Co., Chicago, Ill.
89. W. J. CARMICHAEL, Amer. Clay Mach. Co., Willoughby, O.
96. I. M. JUSTICE, Mfrs. Equipment Co., Dayton, O.
90. ARTHUR PENFIELD, Amer. Clay Mach Co., Willoughby, O.
91. W. H. MERKLE, American Clay Mach. Co., Bucyrus, O.
92. J. POST, East Williston, L. I., N. Y.
93. D. W. JASPER, Bonnot Co., Canton, O.
94. A. A. OLDHAM, Bonnot Co., Canton, O.
95. J. L. SCHROLL, Mfrs. Equipment Co., Dayton, O.
96. J. M. JUSTICE, Mfrs. Equipment Co., Dayton, O.
97. E. M. MAHLMEISTER, Mfrs. Equipment Co., Dayton, O.
98. J. T. UNDERWOOD, Mfrs. Equipment Co., Dayton, O.
99. FRANK ELLIOTT, International Clay Mach. Co., Dayton, O.
100. R. D. LANDRUM, Harshaw-Fuller & Goodwin Co., Cleveland.
101. M. C. BOYD, The Heltzel Steel Form & Iron Co., Warren, O.
102. A. J. PARRISH, Heltzel Steel Form & Iron Co., Paris, Ill.
103. H. WEBSTER, Webster & Kincaid, Cincinnati, O.
104. W. B. KINCAID, Webster & Kincaid, Cincinnati, O.
105. ELMER L. BROWN, Indianapolis, Ind.
106. E. L. POWERS, "Good Roads," New York City.
107. H. WIRSCHING, Standard Dry Kiln Co., Dayton, O.
108. LEON J. FROST, The Enamel Products Co., Cleveland, O.
109. W. H. SHEARMAN, New Jersey Zinc Co., New York, N. Y.
110. C. W. BERRY, Laclede-Christy Clay Prod. Co., St. Louis, Mo.
111. A. S. WALDEN, National Carbon Co., Inc., Cleveland, O.
112. F. L. STEINHOFF, Brick & Clay Record, Chicago, Ill.
113. T. N. McVay, Streator Brick Co., Streator, Ill.
114. J. W. SANDERS, U. S. Stamping Co., Moundsville, W. Va.
115. C. M. FRANZHEIM, The C. Franzheim Co., Wheeling, W. Va.
116. M. G. BABCOCK, Mellon Institute, Pittsburgh, Pa.
117. FRED B. ADAMS, Hoosier Brick Sales Co., Indianapolis, Ind
118. D. C. HAEGER, Haeger Brick & Tile Co., Aurora, Ill.
119. J. M. POWELL, Indiana Drain Tile Co., Brooklyn, Ind.
120. R. M. HOWE, Refractories Mfrs. Assn., Pittsburgh, Pa.
121. J. CROW TAYLOR, Secy., Ky. Brk. & Tile Ass'n., Louisville.
122. F. R. CARTER, Peoria Brick & Tile Co., Peoria, Ill.
123. B. F. CARTER, Peoria Brick & Tile Co., Peoria, Ill.
124. DOUGLAS F. STEVENS, Acme Brick Co., Cayuga, Ind.
125. A. J. DUNN, Chase Foundry & Mfg. Co., Columbus, O.
126. C. E. MYERS, The Pierce Co., Kansas City, Mo.
127. M. CHILCOTE, Oskaloosa Vit. Brick Co., Oskaloosa, Ia.
128. HARRY T. BELLAMY, Western Electric Co., Oak Park, Ill.
129. C. S. JOHNSON, The Frost Mfg. Co., Galesburg, Ill.
130. THOS. A. HIBBINS, The Stevenson Co., Wellsville, Ohio.
131. A. F. HOTTINGER, Northwestern Terra Cotta Co., Chicago.
132. J. W. LAZEAR, Brown Instrument Co., Chicago, Ill.
133. G. W. KELLER, The Brown Instrument Co., Philadelphia, Pa.
134. GEORGE M. KRICK, Krick, Tyndall & Co., Decatur, Ind.
135. D. J. STRICKLAND, Wellington Mach. Co., Wellington, O.
136. GEORGE H. TEFFT, Clay Products Assn., Chicago, Ill.
137. M. W. ATWOOD, Laclede-Christy Clay Prod. Co., St. Louis.
138. JAS. K. MOORE, Streator Clay Mfg. Co., Monmouth, Ill.
139. W. H. SACHS, Manufacturers Equipment Co., Dayton, O.
140. J. W. WORRALL, Manufacturers Equipment Co., Dayton, O.
141. J. C. WIRICK, Manufacturers Equipment Co., Dayton, O.
142. A. H. KRAMER, Manufacturers Equipment Co., Dayton, O.
143. A. V. BLEININGER, Bureau of Standards, Pittsburgh, Pa.
144. J. O. F. CLARK, JR., Amer. Manganese Steel Co., Chicago, Ill.
145. W. C. MITCHELL, Cameron Clay Prod. Co., Cameron, Pa.
146. THOS. SIMPSON, Columbia, Tenn.
147. R. T. STULL, U. S. Bureau of Mines, Columbus, O.
148. E. W. KINGSBURY, Scandinavian Belting Co., Cleveland, O
149. J. M. HALLISSY, Scandinavian Belting Co., Columbus, O.
150. JOS. HUCKSLEY, Indianapolis, Ind.
151. W. G. WORCESTER, Standard Br. Co., Crawfordsville, Ind.
152. C. H. BRYAN, Mercier-Bryan-Larkins Co., Detroit, Mich.
153. R. W. DAVENPORT, Jeffery-Dewitt Co., Detroit, Mich.

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154. E. T. MONTGOMERY, Jeffery-Dewitt Co., Detroit, Mich.
155. R. L. FRINK, The Frink Pyrometer Co., Lancaster, O.
156. HENRY J. VOTAW, The J. D. Fate Co., Chicago, Ill.
157. P. S. WILLETT, The J. D. Fate Co., Plymouth, O.
158. C. A. PRITCHARD, Veedersburg Brick Co., Indianapolis, Ind.
159. W. A. DAY, Frost Mfg. Co., Galesburg, Ill.
160. W. J. LEARY, W. J. Leary Mfg. Co., Buffalo, N. Y.
161. E. A. LALLEY, W. J. Leary Mfg. Co., Buffalo, N. Y.
162. A. E. DAVIS, Western Brick Co., Indianapolis, Ind.
163. J. F. CHAMBERS, The J. D. Fate Co., Plymouth, O.
164. HENRY F. KRIEG, Midland Terra Cotta Co., Chicago, Ill.
165. B. S. RADCLIFFE, Midland Terra Cotta Co., Chicago, Ill.
166. L. E. O'LEARY, M., K. & T. Ry., Cleveland, O.
167. FRANK CERMAK, General Electric Co., Schenectady, N. Y.
168. R. K. HURSH, Ceramic Engineer, Urbana, Ill.
169. C. E. FULTON, Pittsburg Plate Glass Co., Tarentum, Pa.
170. GAIL R. TRUMAN, St. Louis Terra Cotta Co., St. Louis, Mo.
171. C. S. LINDER, Pittsburg Plate Glass Co., Creighton, Pa.
172. F. B. ORTMAN, Northwestern Terra Cotta Co., Chicago, Ill.
173. W. R. McKOWN, Brooklyn Brick Co., Greenfield, Ind.
174. F. K. PENCE, Amer. Encaustic Tiling Co., Zanesville, O.
175. E. C. HILL, N. Y. Arch. Terra Cotta Co., L. I. City, N. Y.
176. C. D. FRAUNFELTER, Ohio Pottery Co., Zanesville, O.
177. SAMUEL RUSOFF, The National Tile Co., Anderson, Ind.
178. L. R. OFFICE, H. Koppers Co., Pittsburgh, Pa.
179. R. G. EISENHART, Consolidated Br. Co., Horseheads, N. Y.
180. C. E. JACKSON, Warwick China Co., Wheeling, W. Va.
181. WM. HERSCHELL, Indianapolis News, Indianapolis, Ind.
182. GEO. S. OLIVE, C. P. A., Indianapolis, Ind.
183. C. J. COOPER, Merchants L. & H. Co., Indianapolis, Ind.
184. G. S. BRUBAKER, H. Brewer & Co., Tecumseh, Mich.
185. P. L. LOHAMAN, Indianapolis, Ind.
186. H. W. MARSH, The S. H. Smith Co., Indianapolis, Ind.
187. HARRY SPURRIEN, Jeffery-Dewitt Co., Detroit, Mich.
188. ARTHUR F. GORTON, Buckeye Clay Pot Co., Toledo, O.
189. J. JOHANNIGMAN, The Pursell-Grand Co., Cincinnati, O.
190. ROWLAND S. WILSON, Thwing Instrument Co., Pittsburgh.
191. H. F. HACKEDORN, Hackedorn Cont. Co., Indianapolis, Ind.
192. PAUL TEETOR, Cambridge, O.
193. JAMES W. MONCRIEFF, Otsego, Mich.
194. A. BERNREUTER, Terre Haute, Ind.
195. ARTHUR S. WATTS, Ohio State University, Columbus, O.
196. B. L. SHULTZ, Waynesfield Drain Tile Co., Waynesfield, O.
197. HOMER F. STALEY, Iowa State College, Ames, Ia.
198. E. S. NEWCOMB, Charles Engelhard Co., New York, N. Y.
199. EMERSON P. POSTE, Elyria Enameled Prod. Co., Elyria, O.
200. BRYAN A. RICE, Elyria Enameled Products Co., Elyria, O.
201. HERBERT FORESTER, Veritas Firing Sys. Co., Cleveland, O.
202. S. McDOWELL, Champion Ignition Co., Flint, Mich.
203. T. A. KLINEFELTER, Westinghouse E. & M. Co., Derry, Pa.
204. P. G. LARKIN, Denver Terra Cotta Co., Denver, Col.
205. W. N. DURBIN, Anderson Found. & Mach. Wks., Anderson.
206. L. F. BARRINGER, General Electric Co., Schenectady, N. Y.
207. F. W. VON OVEN, Martin & Von Oven, Naperville, Ill.
208. E. STEVENS, Bippus Tile Co., Bippus, Ind.
209. S. C. HAINES, Main Belting Co., Chicago, Ill.
210. BERNARD LARKINS, C. & A. Potts & Co., Indianapolis, Ind.
211. H. R. MASON, The Monroeville C. Prod. Co., Monroeville, Ind.
212. J. W. ROBB, Clinton Paving Brick Co., Clinton, Ind.
213. J. F. BURDUSH, Grand Rapids Rfg. Co., Grand Rapids, Mich.
214. THOMAS W. JONES, The Ironsides Co., Columbus, O.
215. A. B. MEYER, A. B. Meyer & Co., Indianapolis, Ind.
216. J. W. VANWERT, A. B. Meyer & Co., Indianapolis, Ind.
217. O. O. JONES, Kokomo Brick Works, Kokomo, Ind.
218. A. R. D. JOHNSON, Cherokee Brick Co., Raleigh, N. C.
219. A. T. JOHNSON, Cherokee Brick Co., Raleigh, N. C.
220. O. C. KENNEDY, Cherokee Brick Co., Raleigh, N. C.
221. HAROLD COPPING, Barber-Green Co., Kankakee, Ill.
222. JAMES A. REEVES, Streator Drain Tile Co., Streator, Ill.
223. JNO. F. MORRIS, Streator, Ill.
224. JULIAN T. BRAMLETT, Enid, Miss.
225. SHEN HUNG, Ohio State University, Columbus, O.
226. C. C. Lin, Ohio State University, Columbus, O.
227. S. D. KNIGHT, Kankakee Tile & Brick Co., Kankakee, Ill.
228. L. M. MERRITT, Ohio State University, Columbus, O.
229. RAY T. WATKINS, Ohio State University, Columbus, O.
230. E. H. LINTZ, Ohio State University, Columbus, O.
231. R. B. GILMORE, Ohio State University, Columbus, O.
232. E. D. VANCE, Ohio State University, Columbus, O.
233. J. B. CONON, Ohio State University, Columbus, O.
234. J. N. FATOUT, Indianapolis, Ind.
235. R. H. MINTON, General Ceramics Co., Metuchen, N. J.

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236. FRED A. WHITAKER, General Ceramics Co., Metuchen, N. J.
237. G. H. BROWN, Rutgers College, New Brunswick, N. J.
238. R. L. CLARE, Federal Terra Cotta Co., Woodbridge, N. J.
239. M. R. SCOTT, Ohio State University, Columbus, O.
240. R. D. COOKE, Mellon Institute, Pittsburgh, Pa.
241. E. WARD TILLOTSON, Mellon Institute, Pittsburgh, Pa.
242. J. M. MAMER, Campus Brick & Tile Works, Campus, Ill.
243. P. H. SWALM, The J. L. Mott Co., Trenton, N. J.
244. J. B. SHAW, Alfred University, Alfred, N. Y.
245. OSCAR THOMAS, Thomas & Evans, Indianapolis, Ind.
246. P. C. READ, Indianapolis, Ind.
247. F. E. DELL, Dell Coal & Brick Co., Indianapolis, Ind.
248. E. C. HERVEY, Hydraulic Press Brick Co., Indianapolis, Ind.
249. T. H. TONDREAU, Brazil Clay Co., Brazil, Ind.
250. WILLIAM CONWAY, Philadelphia, Pa.
251. JOHN C. BOSS, J. C. Boss & Co., Elkhart, Ind.
252. T. J. NEISWANDER, Harvey, Iowa.
253. JOHN J. MORONEY, Chicago Brick Mach. Co., Chicago, Ill.
254. W. G. STEVENSON, The Stevenson Co., Wellsville, O.
255. H. FROST, Los Angeles Pressed Brick Co., Los Angeles, Cal.
256. GUS LARSEN, Los Angeles Pressed Br. Co., Los Angeles, Cal.
257. H. H. OBERLY, Jas. B. Oberly Co., Wilmington, Del.
258. C. A. LANO, Borden Brick & Tile Co., Goldsboro, N. C.
259. J. T. HUMMERT, Gem City Press Brick Co., Quincy, Ill.
260. LAURENCE B. KOBLITZ, The Barkwill-Farr Co., Cleveland.
261. H. J. FLOOD, Chisholm, Boyd & White Co., Chicago, Ill.
262. L. W. FLOOD, Chisholm, Boyd & White Co., Chicago, Ill.
263. CULLEN W. PARMELEE, University of Illinois, Urbana, Ill.
264. W. H. LUCHTENBERG, Lk. Sh. Shale Br. Co., Ashtabula, O.
265. CARL B. HARROP, Ohio State University, Columbus, O.
266. W. C. HOOVER, Portland Drain Tile Co., Portland, Ind.
267. D. W. EWERS, Angola Brick & Tile Co., Angola, Ind.
268. W. MALSCH, Roessler-Hasslacher Chemical Co., N. Y. City.
269. O. W. WILL, Roessler-Hasslacher Ch. Co., P. Amboy, N. J.
270. H. W. SMITH, Roessler-Hasslacher Chem. Co., Cleveland, O.
271. H. S. FATE, The J. D. Fate Co., Plymouth, O.
272. H. R. SYKES, The J. D. Fate Co., Plymouth, O.
273. B. H. RICHARDS, Richards Brick Co., Edwardsville, Ill.
274. C. G. POWELL, Montezuma Brick Works, Montezuma, Ind.
275. L. J. BRENNER, Cannelton Clay Prod. Co., Cannelton, Ind.
276. JOS. D. McGONAGLE, Junction City, O.
277. G. B. LUCKETT, Crawf'dsville Sh. Br. Co., Crawf'dsville, Ind.
278. J. GRETENCORT, Lewistown Br. & T. Co., Lewistown, Mont.
279. C. W. WINSLOW, Chamber of Commerce, Springfield, Mass.
280. R. A. BAILEY, Springfield Brick Co., Springfield, Mass.
281. WM. K. MARTIN, Crawfordsville, Ind.
282 CHAS. W. PARKS, International Clay Mach. Co., Dayton, O.
283. L. E. RODGERS, L. E. Rodgers Engr. Co., Chicago, Ill.
284. A. F. KLEYMEYER, W. Point Br. & Lbr. Co., W. Point, Ky.
285. H. C. KLEYMEYER, Standard Br. Mfg. Co., Evansville, Ind.
286. FRANK McCLELLAN, Arnold-Creager Co., Cleveland, O.
287. W. E. DUNWODY, Standard Brick Co., Macon, Ga.
288. HOWARD K. STAFFORD, Ga.-Car. Brick Co., Augusta, Ga.
289. DONALD W. ROSS, Findlay Clay Pot Co., Washington, Pa.
290. J. F. KREHBIEL, Advance Terra Cotta Co., Chicago Hts., Ill.
291. THOS. SALVESAN, Salvesan Face Brick Co., Petersburg, Ill.
292. C. H. MILLIGAN, Alfred University, Alfred, N. Y.
292. F. A. KIRKPATRICK, Bureau of Standards, Pittsburgh, Pa.
293. GUS M. TUCKER, Robinson Clay Products Co., Akron, O.
294. H. O. STEELE, J. C. Steele & Sons, Statesville, N. C.
295. CHAS. A. STONE, Basic Products Co., Kenova, W. Va.
296. R. G. KEISER, Phila. Textile Mach. Co., Philadelphia, Pa.
298. T. C. McDERMOTT, Mohawk Val. Br. & Sup. Co., Utica, N. Y.
299. H. WORSHAM, Carrier Eng. Corp., New York City, N. Y.
300. JAMES E. DUNCAN, JR., Donley Brick Co., Washington, Pa.
301. J. O. TRAUTWEIN, Trautwein Dryer & Engr. Co., Chicago.
302. P. A. NUTTER, Adams Clay Products Co., Martinsville, Ind.
303. FRANK C. HUSTEN, Indianapolis, Ind.
304. R. C. BURTON, Burton-Townsend Co., Zanesville, O.
305. E. J. James, Kushequa Brick Co., Kushequa, Pa.
306. H. R. GARDEN, Salem Brick Co., Salem, Va.
307. M. C. VIELE, North Adams Brick Co., North Adams, Mass.
308. A. C. STEPAN, The Roessler-Hasslacher Ch. Co., Chicago, Ill.
309. H. F. MILLS, Union Sanitary Mfg. Co., Noblesville, Ind.
310. C. DITTMAN, Roessler-Hasslacher Chem. Co., Cincinnati, O.
311. W. M. TUTTLE, Tuttle Brick Co., Middletown, Conn.
312. L. M. TUTTLE, Tuttle Brick Co., Middletown, Conn.
313. H. D. PAYNE, Tuttle Brick Co., Middletown, Conn.
314. ROY B. CHILD, Hancock Brick & Tile Co., Findlay, O.
315. L. LEO CHILD, Hancock Brick & Tile Co., Findlay, O.
316. F. K. MINOR, Celite Products Co., Pittsburgh, Pa.
317. W. F. ROCHOW, Harbison-Walker Refrac. Co., Pittsburgh.

NAME. FIRM. TOWN.

318. H. H. FREESE, E. M. Freese & Co., Galion, O.
319. W. F. LANDERS, U. S. Enc. Tile Wks., Indianapolis, Ind.
320. JAY CLARK, U. S. Encaustic Tile Co., Indianapolis, Ind.
321. SAM GALLOWAY, U. S. Encaustic Tile Co., Indianapolis, Ind.
322. CHAS. A. HILL, Brazil Clay Co., Brazil, Ind.
323. C. F. JENKINS, Brazil Clay Co., Brazil, Ind.
324. CHAS. W. HOFF, Terre Haute, Ind.
325. H. R. BEEGLE, Beaver Clay Mfg. Co., New Galilee, Pa.
326. C. O. NORDENSSON, Huessener Eng. Co., Pittsburgh, Pa.
327. G. L. ROGERS, Algonia Steel Corp., Sault Ste. Marie, Can.
328. WALTER PURSELL, The Pursell Grand Co., Cincinnati, O.
329. HON. W. C. REDFIELD, Dept. of Comm., Washington, D. C.
330. J. G. BRAGG, Bureau of Standards, Pittsburgh, Pa.
331. CHAS. F. BINNS, Alfred, N. Y.
332. DR. S. W. STRATTON, Bureau of Mines, Pittsburgh, Pa.
333. J. M. HOSKINS, Terre Haute Vit. Br. Co., Terre Haute, Ind.
334. CECIL A. GARDNER, Am. Enc. B. & T. Co., New York, N. Y.
335. B. MIFFLIN HOOD, B. Mifflin Hood Brick Co., Atlanta, Ga.
336. FRED J. WICKERS, Maxwell, Ind.
337. L. E. TAYLOR, Buckeye Ditcher Co., Findlay, O.
338. JEFF BANNON, P. Bannon Pipe Co., Louisville, Ky.
339. J. H. CHAMBERS, Chambers Bros. Co., Philadelphia, Pa.
340. L. M. JOHNSON, Adams Clay Prod. Co., Martinsville, Ind.
341. M. T. ANDERSON, Oliver Springs, Tenn.
342. E. W. JACOX, Webster & Kincaid, Cincinnati, O.

NAME FIRM. TOWN.

343. W. G. HUMMELLWRIGHT, Stan. Bk. Co., Crawf'dsville, Ind.
344. W. L. BROWN, Standard Brick Co., Frankfort, Ind.
345. A. J. BRIGHT, Thew Automatic Shovel Co., Lorain, O.
346. JOHN F. SLATER, Grateless Furnace Co., Des Moines, Ia.
347. GEO. W. DENISON, The Ohio Clay Co., Cleveland, O.
348. A. A. McCLAMROCK, Wallace Mfg. Co., Frankfort, Ind.
349. H. C. BREARLEY, Nat. Board Fire Und., New York, N. Y.
350. JOHN H. BLACK, J. H. Black Co., Buffalo, N. Y.
351. C. P. BOYD, Clayton, Ind.
352. F. A. MARTIN, Martin Bros., Dunkirk, Ind.
353. J. H. WILSON, Perrysburg, O.
354. S. N. LINGMAN, Brownsburg Tile Works., Brownsburg, Ind.
355. WM. INMAN, Inman Tile Co., Hartford City, Ind.
356. H. LANDRUM, Columbus Clay Mfg. Co., Black Lick, O.
357. STEVEN KELLY, Arbuckle & Co., Rushville, Ind.
358. J. W. ARBUCKLE, Homer, Ind.
359. CHAS. D. GLICK, Grammer, Ind.
360. ROBT. WALKER, American Sewer Pipe Co., Jackson, Mich.
361. T. P. HELLER, Jackson Br. & Hol. Ware Co., Brownst'n, Ind.
362. M. CASEY, Colfax Drain Tile Co., Colfax, Ind.
363. C. LYONS, Brook Terra Cotta & Tile Co., Brook, Ind.
364. A. H. WEHINGER, Ottawa Tile Co., Ottawa, O.
365. J. SHIDELER, Shideler Bros., Huntington, Ind.
366. F. BERRY, Reed & Berry, Lynn, Ind.
367. WM. J. WRIGHT, Whiteland Tile Co., Whiteland, Ind.
368. L. ILLIFF, Summitville Drain Tile Co., Summitville, Ind.

VERBAL CONTRACTS DO NOT PROTECT THE SELLER.

A LARGE number of important business transactions occur each day in which the oral contract is relied upon as entirely sufficient. Oral contracts are usually considered sufficient where the transaction concerns promises to sell or deliver goods, and the buyer agrees to accept and pay for them. Under this form of contract the seller is the one who suffers in most instances, for he has nothing more than the buyer's mere verbal promise to fulfill certain obligations. Of course, there are cases where the buyer is the loser, for it may be impossible for him to compel delivery of the goods contracted for, through which he may sustain a loss.

The reason so many sellers still place confidence in oral contracts is probably because they have not been forced to test the validity of these contracts, or to produce sufficient evidence that a contract actually was entered into. When the buyer states that he did not enter into a contract for the purchase of goods, and the seller has no written evidence to substantiate his claim, then he will realize how hard a matter it is to present sufficient evidence to the court in proof of his claim. Even where the seller can prove that the buyer entered into an oral contract, the buyer still has many chances of escaping liability.

The importance of putting contracts into writing can not be emphasized too much, whether they fall within the terms of the statute of frauds or not, for a written contract is absolute proof of the promises made by both parties, while the validity of an unwritten contract is in some cases not proved except after costly litigation.

The fallacy of relying upon an oral contract was demonstrated quite forcibly to the seller in the following instance:

In this case Hammond, the seller, entered into an oral contract with Blickford, the buyer, to deliver a carload of material at Blickford's warehouses. Hammond performed his part of the contract faithfully and shipped the material as agreed upon. When the car arrived at its destination the railroad company promptly notified Blickford of its arrival. Blickford refused to receive and accept the material because he discovered later on that he could purchase similar material at a reduced price. The railroad, after holding the car for some time, transferred the material to its terminal warehouses.

Hammond brought suit to recover the value of the material and to enforce Blickford to perform his part of the contract. Hammond was not allowed to recover, and the reasons given by the Court will apply to thousands of other cases where oral contracts are in controversy. The Court said: "While the proof shows that the defendant in this case verbally agreed to purchase the material, upon certain terms and conditions disclosed by the record, there is no evidence whatever from which a jury would be warranted to find an actual acceptance and a receipt of the material sold by the verbal contract, as would gratify the plain provisions of the statute, and would constitute a valid and enforceable contract of sale."

In order to illustrate what the Court means by "actual acceptance and receipt of the material" we give below the part of the statute of frauds relating to this class of contracts. This statute has been enacted in nearly all states and in almost every instance contains similar provisions:

"A contract to sell or a sale of any goods or choses in action of the value of fifty dollars or upward shall not be enforceable by action, unless the buyer shall accept part of the goods or choses in action so contracted to be sold, or sold and actually receive the same, or give something in earnest to bind the contract, or in part payment, or unless some note or memorandum in writing of the contract or sale be signed by the party to be charged or his agent in that behalf.

"There is an acceptance of the goods within the meaning of this section when the buyer, either before or after delivery of the goods, expresses by words or conduct his assent to becoming the owner of those specific goods."

In another case in which an oral contract was involved, and in which the buyer was not bound because he did not accept the goods, the Court said: "The statute does not speak of delivery, but superadds to the delivery which the common law requires acceptance of the goods, or some part of them, by the purchaser. It confers upon the buyer alone the privilege to prevent a consummation of the contract by refusing to accept and receive the goods. While there can be no acceptance under the statute without delivery by the seller, yet there must be both delivery and acceptance in order to sustain an action upon the contract. In order to satisfy the statute there must be delivery of the goods with intent to vest the right of possession in the vendee, and there must be an actual acceptance by the latter with intent to take possession."

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TWENTIETH ANNUAL MEETING AMERICAN CERAMIC SOCIETY.

The Remarkable Increase in Membership and the Report of the Committee on Military and Economic Preparedness Are Particularly Noteworthy.

President George H. Brown.

President-Elect
Homer S. Staley.

Vice-President A. F. Graves-Walker.

THE TWENTIETH annual meeting of the American Ceramic Society, held at the Claypool Hotel, Indianapolis, Ind., February 11 to 14, was a meeting worthy of the twentieth anniversary of the society. All the sessions were held in the palm room on the ninth floor, and every convenience was afforded for the proper presentation of illustrated papers.

The opening session was called to order by President Brown Monday morning, February 11, at 10:00 o'clock. Committee reports showed the society to be in much better financial condition than even the usual healthy state. Of particular interest, however, is the very marked increase in membership.

A comparison of the membership, February, 1917, and to date, is as follows:

	Honorary Members	Foreign Members	Resident Members	Foreign Associate Members	Resident Associate Members	Contributing Members	Total
February, 1917	4	10	71	47	414	0	546
February, 1918	4	11	81	49	651	33	829
Gain	0	1	10	2	237	33	283

This increase in membership of 283, as compared to an increase of 21 for the year 1916-1917, shows that the membership committee under the direction of Ross C. Purdy was comprised of men who acted. This committee, as well as those of standards and military preparedness, was appointed by Past President Barringer and was strongly supported by other active members of the society.

The trustees reported the formation of seven local branches or sections; namely, the Pittsburgh District Local Section, the New York State Local Section, the Chicago Local Section, the Northern Ohio Local Section, the Central Ohio Local Section, the St. Louis Local Section, the New England States Local Section.

The Pittsburgh District Local Section was made by granting a new charter to the old Beaver Section. This not only gives the Pittsburgh Section a strong foundation to work from, but speaks well for the loyalty of the Beaver Section in its desire to strengthen the society. The value of these local sections in relation to the parent society cannot be overestimated. The sections get in touch with local problems, and not only afford means of frequent meetings of the nearby members, but also one of great benefit in interesting people in becoming members of the parent society. The fact that these sections can have members that do not belong to the parent society will prove a big factor in increasing the membership.

President Brown's address, which opened the Monday afternoon session, was particularly interesting, dealing with the relation of ceramic products and the war. It is gratifying to know that the ceramic manufacturers are meeting the demands placed upon them.

Following the president's address, the reading of the papers was taken up and continued to completion on Wednesday. The list of papers follows:

Raw Materials, their Occurence, Refining and Testing.

Natural Hydraulic Cements in New York, Robert W. Jones, Albany, N. Y.

Some Clays of the Pacific Northwest, Hewitt Wilson, Columbus, Ohio.

The Occurrence and Mineralogy of Some Iowa Clays, S. N. Galpin, Ames, Iowa.

Kaolin Deposits of Quebec, Joseph Keele, Ottawa, Canada.

Florida Clays, E. H. Sellards, State Geologist.

Residual Fire Clay Deposits in Western Idaho, E. K. Soper, Cornwallis, Oregon.

The Properties of Some Ohio and Pennsylvania Stoneware Clays, H. G. Schurecht, Columbus, Ohio.

Shrinkage in the Clay State and Its Relation to Dehydration, T. A. Klinefelter and E. H. Fritz, Derry, Pa.

Some Physical Changes in Clays from Normal Temperature to Red Heat, Chas. W. Saxe and O. S. Buckner, Worcester, Mass.

A Method for the Determination of Air in Clay, Harry Spurrier, Detroit, Mich.

The Nature of Occluded Gases in Clay, Harry Spurrier, Detroit, Mich.

Some Methods of Measuring Plasticity, Arthur F. Gorton, Toledo, Ohio.

The Plasticity of Clays and Limes by the Emley Plasticimeter, F. A. Kirkpatrick, Pittsburgh, Pa.

Enamels.

Effect of Time of Smelting on Properties of Frit, Emerson P. Poste and Bryan A. Rice, Elyria, Ohio.

Antimony Oxide as a Substitute for Tin Oxide in Cast Iron Enamels, J. B. Shaw, Alfred, N. Y.

The Action of Acetic Acid Solutions of Various Strengths on Sheet Steel Enamels, Leon J. Frost, Cleveland, Ohio.

Ground Coat Enamels for Cast Iron, Homer F. Staley, Ames, Iowa.

Glass.

History of Alabaster Glass, Alexander Silverman, Pittsburgh, Pa.

Observations on the Formation of Seed in Optical Glass Melts, Arthur E. Williams, Pittsburgh, Pa.

Special Pots for the Melting of Optical Glass, A. V. Bleininger and F. H. Riddle, Pitsburgh, Pa.

Molecular Compounds and Glass, E. Ward Tillotson, Pittsburgh, Pa.

Topic for Discussion: How Extensively Can Salt Cake and Nitre Cake be Substituted for Soda Ash in a Glass? Discussion led by Alex. Silverman, Pittsburgh, Pa.

White Ware Bodies and their Properties.

Report of the Committee on Chemical Porcelain, Chas. F. Binns, Alfred, N. Y.

Some Types of Hard Fire Porcelains, F. H. Riddle and W. W. McDaniel, Pittsburgh, Pa.

Secretary-Elect
Charles F. Binns.

Ross C. Purdy.

Temporary Secretary
Arthur S. Watts.

The Effect of Electrolytes on the Properties of Clays, H. G. Schurecht, Columbus, Ohio.

Topic for Discussion: Is the Purification of Low Grade Fire Clays Economically Practical? Discussion led by S. N. Galpin, Ames, Iowa.

The Influence of the Degree of Coagulation Upon the Physical Properties of Some Georgia Kaolins, W. H. Douda, Haydenville, Ohio.

Some Experiments in the Hydration of Anhydrite and Dead-burned Gypsum, A. C. Gill, Ithaca, N. Y.

Glazes and Colors.

Note on Albany and Michigan Slip Clay Blends, T. A. Klinefelter, Derry, Pa.

Barium as a Bristol Glaze Ingredient, A. E. Hull, Jr., Zanesville, Ohio.

A Cobalt Uranium Green Glaze for Terra Cotta, Hewitt Wilson, Columbus, Ohio.

Polychrome Decoration of Terra Cotta with Soluble Metallic Salt, Hewitt Wilson, Columbus, Ohio.

Note on Colors Produced by Use of Soluble Metallic Salts, Paul G. Larkin, Denver, Colo.

Some Phenomena in Glaze Reduction, H. B. Henderson, Columbus, Ohio.

Volume, Porosity and Shrinkage Changes in Whiteware Mixtures, R. Guy Cowan.

Note on the Volume, Porosity and Shrinkage Changes in Blunged and Ground Bodies, R. Guy Cowan, Cleveland, Ohio.

Some Mechanical Properties of Electrical Porcelain Made by the Principal Manufacturing Methods, J. W. Ward, Derry, Pa.

Note on the Relation Between the Composition of Porcelain and the Dielectric Strength at High Temperature, A. V. Bleininger, Pittsburgh, Pa.

Whiteware Nomenclature, Arthur S. Watts, Columbus, Ohio.

Some Porcelains Containing no Free Silica, Arthur S. Watts, Columbus, Ohio.

A Test for Vitrification in Porcelain by Specific Gravity Determination, Using Dense Solutions, Harry Spurrier, Detroit, Mich.

Chemical Stoneware.

Development of Chemical Stoneware Industry in the United States (with lantern illustrations), Fred A. Whitaker, Keasbey, N. J.

Terra Cotta Bodies.

The Use of Furnace Slag as Grog in Architectural Terra Cotta Bodies, R. H. Minton, Metuchen, N. J.

Drain Tile.

Further Comparison of the Sodium Sulfate and Freezing Tests for Drain Tile, Homer F. Staley, Ames, Iowa.

Refractories.

Alunite Residue as a Refractory, J. B. Shaw, Alfred, N. Y.

A Note on the Refractory, Dalomite, Chas. A. Stone.

Note on the Size of Grains of Silica Brick, D. W. Ross, Pittsburgh, Pa.

Notes on the Laboratory Testing of Silica Brick, R. J. Moutgomery and L. R. Office, Pittsburgh, Pa.

The Utilization of Ohio Silicious Materials in the Manufacture of Refractory Brick, W. S. Stout and H. B. Henderson, Columbus, Ohio.

The Porosity and Volume Changes of Clay Fire Brick at Furnace Temperatures, Geo. A. Loomis, Pittsburgh, Pa.

The Influence of the Chamotte Upon the Heat Conductivity of Refractory Brick—Alumina Chamottes, Thos. B. Hobson.

Driers and Drying.

The Influence of Gravitation Upon the Drying of Ceramic Ware, E. W. Washburn, Urbana, Illinois.

A Study of Draft Movements in Flues, E. H. Fritz, Derry, Pa.

Kilns and Kiln Problems

The Zwermann Tunnel Kiln and Its Operation, Carl H. Zwermann, Kalamazoo, Mich.

A Heat Balance of a Gas Fired Chamber Kiln, R. K. Hursh, Urbana, Ill.

Note on Surface Combustion, A. E. Blake, Pittsburgh, Pa.

An Attempted Heat Balance on a Continuous Kiln of the Chamber Type, Chester Treischel and H. S. Robertson, Schenectady, N. Y.

Heat Insulation as Applied to Kilns (Illustrated with slides), P. A. Boeck, New York.

Test of a Producer Gas Fired Periodic Kiln (By permission of Director, Bureau of Standards), C. H. Harrop, Columbus, Ohio.

Some Developments in the Underwood Producer Gas Burning System, I. M. Justice, Dayton, Ohio.

Topic for Discussion: Maximum Furnace Temperatures Possible with Natural Gas, Water, City Gas, and Producer Gas, Discussion led by I. M. Justice, Dayton, Ohio.

Among the interesting papers were those by Messrs. Bleininger, Spurrier, Williams, Whitaker, Washburn, Staley and Kirkpatrick, which brought several new ideas. Mr. Bleininger's paper on "The Relation Between the Composition of Porcelain and the Dielectric Strength at High Temperatures" brought out some developments not generally known, and should prove of commercial value.

Mr. Harry Spurrier, of Detroit, has attacked several problems from a somewhat different angle than has been the general ceramic practice. His method of separation of small porcelain pieces by the floatation process is something that will no doubt lead to other investigations along the same lines. Mr. H. F. Staley's paper was of particular interest to drain tile manufacturers.

Fred A. Whitaker, of Keasby, N. J., presented a series of slides showing difficult shapes made of stoneware. Some of these pieces were enormous and of very complicated construction. Some were so intricate that it would seem impossible to make them, at least to the average clayworker.

Section Q.

A Section Q membership campaign rally, consisting of an informal dinner with special entertainment under the management of Ross C. Purdy, was well attended by the ladies as well as the men, and will long be remembered by those present. Mr. Purdy took a novel way of introducing the guests, and deserves much credit for an interest which very few could arouse. A pleasant feature was the enthusiasm displayed by the alumni and members of the various universities represented. Ohio State easily outnumbered the rest, but Professor Binns and his alumni deserve particular mention for the way they showed their school spirit.

Tuesday the Ceramic Society members were the guests of the N. B. M. A. at their smokerette, and enjoyed the entertainment exceedingly, as well as the excellent supper. The local entertainment committee provided an entertainment which was worthy of the Hoosier State and much appreciated by the ceramists.

On account of the press of business, a business session was held by the Ceramic Society after the supper. At this meeting, the counselors of the various local sections made their reports. The report of the military and economic committee was of particular interest, and showed that the society has been of considerable aid to the government. Also that they had been able to secure necessary supplies for specific products that the government was in particular need of.

The standards committee likewise reported at this time. Their year's work has been published in a reprint and will be found of great value to laboratories interested in testing clays. As this work is only started, their ultimate findings will be still more valuable.

Wednesday evening most of the members again enjoyed the hospitality of the local committee, and were guests at the Circle Theater, one of the most beautiful picture houses in the United States. The sessions Wednesday afternoon and Thursday morning were taken up with new business, appointment of committees, etc. Among the committees reappointed, or newly appointed, were those of membership, standards, military and economic preparedness, and summer meeting. The reports of the committee on rules and the committee on publications were of special interest. It is very evident that the wonderful growth in membership the past year has made it possible for the society to expand, and that expansion will result in a greater and stronger position for ceramics in the technical and industrial world.

The officers were installed as follows:

President, Homer F. Staley, Ames, Iowa.

Vice-president, A. F. Greaves-Walker, Baltimore, Md.

Secretary, Charles F. Binns, Alfred, N. Y.

Treasurer, R. K. Hursh, Urbana, Ill.

Member board of trustees, 1918-21, R. D. Landrum, Cleveland, Ohio.

The following members were promoted from associate to active membership: Marion W. Blair, Robert L. Clare, N. B. Davis, Raymond M. Howe, F. A. Kirkpatrick, George D. Morris and H G. Schurecht. A large list was also nominated for promotion to active membership for next year.

Mr. T. A. Randall, who was given a life membership in the society some time ago as an associate, was promoted to full membership.

During the meetings, letters of condolence were sent to the families of Capt. John A. Shanks, Glasgow, Scotland, and W. A. Rivers, of Old Bridge, N. J.

One of the regrets of the entire membership in attendance was the fact that Major Edward Orton, Jr., could not be present. As is well known, Major Orton was the founder of the society and the secretary of the organization for twenty years. His resignation as secretary caused deep regret. Prof. C. F. Binns, who succeeds Major Orton as secretary, is also one of the early members and a past president of the society.

Give Him Gas.—The beautiful young woman interviewed a fortune-teller on the usual subjects.

"Lady," said the clairvoyant, "you will visit foreign lands, and the courts of kings and queens. You will conquer all rivals and marry the man of your choice. He will be tall and dark and aristocratic looking."

"And young?" interrupted the lady.

"Yes, and very rich."

The beautiful lady grasped the fortune-teller's hands and pressed them hard.

"Thank you," she said. "Now tell me one thing more. How shall I get rid of my present husband?"—Gas Magazine.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

WHILE THE CLAYWORKING industries may be hit in some of its branches by the war it is safe to say that the demand for sewer pipe is going to continue active. Not only in San Francisco will there be a good demand for this pipe, but in all the towns of the State and in the neighboring State the demand will remain constant despite the war activities. Only recently the city trustees of Redwood City advertised for plans and specifications for a sewer along Chestnut street. Grass Valley is calling for 527 feet of 6-in. pipe, with Y's and stoppers. Daly City called for bids for a large amount of pipe for a sanitary and storm sewer, and several other cities of the State advertised the same day for bids on sewer pipe of greater or lesser quantity. From Arizona comes the information of activities along the same line. For instance, Jerome is calling for bids for 3,100 lin. ft. of 12-in. pipe and 10,200 lin. ft. of 8-in. pipe for sewerage purposes; and Globe has voted bonds to the amount of $210,000 for the installation of a sanitary sewerage system. Nevada and Oregon have each called for similar bids at recent dates, and this line of the claywork promises to keep up to the last year's record, if it does not surpass it. Of course, the war is going to hurt the building industry as far as private building is concerned. It has done that now, but many of the brick men are predicting that work on Government contracts is likely to increase as the year progresses, and the loss of private contracts may be offset by this Government work. Many workmen are being shifted from one section of the country to another in the war work and new buildings, both for the growing industries and for the workmen's homes are being demanded every day. There is a shortage of steel for the big buildings and of lumber for the workmen's houses, and it seems more than likely that the brick man will be appealed to in this dilemma.

The Parker Brick Co. and the Contractors Supply Co., both of Santa Barbara, have merged their interests into one concern under the name of the Parker Brick Co. Both concerns were owned by practically the same people. War time economy and greater efficiency are given as the reason for the merger.

F. A. Costello, secretary of the newly formed branch of the Clay Products Association of Chicago, is of the opinion that there will be no great resumption of building until after the war. The fact that the Government is not looking with favor on the issuance of bonds for business enterprises in competition with the Government's needs in the money market, he says, will stop all building of any moment until the war comes to an end.

Gladding, McBean & Co., whose works are at Lincoln, Cal., say that they are doing very little work at the plant, which is all but shut down.

N. Clark & Son, whose works were burned down in Alameda some seven or eight months ago, say that the ground has now been entirely cleaned up and that rebuilding operations have been begun. They can not say when they will be ready to get into the game again, but they believe the plant will be running again before the end of the year.

The Stockton Fire Brick and Enamel Co. has just won its contention before the State Railroad Commission that will prevent an increase of freight on its product shipped from Stockton over the Southern Pacific. The decision means a saving of $7 per car for the company. J. T. Roberts, its manager, says that there is a constant demand for the kind of brick which he makes and he has no fear that the war will stop the use of fire brick. His information is that all the fire brick works in this vicinity, at least, are as busy as they can be and that a majority of them have enough orders in sight to keep them busy during the rest of the present year.

The Livermore Brick Works is still enlarging its plant. The installation some time ago of a dryer, which utilizes the surplus heat of the kilns instead of the old system of steam pipes, expedites the work of drying so much that the capacity of the whole plant is nearly doubled. More kilns were made necessary and are being installed. The company finds a demand for all the fire brick which it can turn out, and that there is also a good demand for face brick. Fifty men are employed at the works at present and the number is expected to be doubled by spring. Most of the men are employed at piece work, instead of by the day and they are making more wages than ever before.

The Lincoln Clay Products Co., which has had a plant in operation at Lincoln, Cal., for the past nine years, recently began the installation of a clay refining plant. M. J. Dillman, president of the company, says that great progress is being made in the improvements, which will allow the company to utilize the output of the works in a number of ways which were impossible before. A large amount of pulverizing and grinding machinery is now in transit to the plant and will soon be installed. By these improvements in the plant the company will turn out clay not only for burned clay products, but also for use in paint, oilcloth, paper and other products.

The Vallejo Brick and Tile Co. is making ready to reopen the old plant near this city under the management of George Sutton. Mr. Sutton has had a gang of men overhauling the machinery and putting into shape for immediate resumption of work. The company has a number of contracts already signed and expects to have a force of a hundred or more men at work by the time the plant is well under way.

The old Carey brickmaking plant near Richmond, Cal., has been overhauled and will be reopened early next month. The plant will probably confine its activities to tile at the start.

The contract to furnish brick for the new factory building costing $400,000 which is to be built by the National Paper Products at Stockton has been awarded to W. H. Edwards of the United Materials Co. of this city.

J. O. Stewart, of Oakland, has organized the Sacramento Pressed Brick Co., has taken over the plant of the old Independent Pressed Brick Co. and will start operation at once. The plant is situated on the south bank of the American river, near the mouth, and just on the outskirts of Sacramento. Stewart plans to start with a small force, making about 20,000 pressed brick a day at first and then expand as rapidly as business justifies it. The output of the plant for the first thirty days was contracted for before operations were begun.

Gladding, McBean & Co. have been awarded the contract for the architectural terra cotta for the new Young Women's Christian Association building which is being erected on Sutter street in this city for $6,670. The brick work on the building was awarded on bids to Anderson & Ringrose for $26,063.

The Piedra Magnesite Co. has been incorporated in this State with a capital of $10,000 by J. W. Thomas, T. J. Curran, W. B. Phillips, Joe L. Mitchell and R. D. Stephenson, all of Porterville, and the principal office will be in that town. The incorporators have extensive deposits near Piedra, Colo.

SUNSET.

San Francisco, Cal.

THE ADVANTAGES OF CLAY STORAGE AND THE DESCRIPTION OF A SUCCESSFUL INSTALLATION.

By F. H. Riddle.*

PART II.

WHEN THE NECESSARY compartments are filled, the car is run along the track until it is directly over a hopper. There are three of these hoppers, each one emptying on to a conveyor and each conveyor feeding into a drypan. Fig. 2 shows a section with the conveyor which feeds the pan. Fig. 8 shows the end of the diaphragm car and the dump bottom. The bottom is let down by means of a trip, and after dumping, is lifted back into position by means of a ratchet lever arrangement, as shown on the right end of the cars in Fig. 7. Fig. 8 shows the operator's platform, and the trolley wires on the left which supply current to operate the motor which drives the car.

The operating of the measuring cars can be the source of considerable extra work unless it is handled so as to load the clay farthest from the dump first, and then work towards the dumping point. If the dumping point happens to be midway along the line of bins, the cheapest method is to go to the end where the smallest load will be put on, then down the other way to the farthest bin necessary for the mix, and work back to the dumping point. It would save considerable extra hauling if the load obtained at one end of the system could be dumped on the way over the dumping point on the way to the other end, but it would cause loss of time lifting the bottom and would result in feeding the pan with an uneven mixture of the materials. The above work is done by the second of the three men mentioned.

Fig. 9 shows one of the dry pan installations with the conveyor leading from the dump, up a gradual incline to the pan. The tail end of the conveyor is far enough below the measuring car so that the hopper sides can taper from a distance equal to the length of the car section at the top, down to a distance equal to the width of the conveyor at the bottom. This thoroughly mixes all the different materials and carries out an even mixture on the conveyor, no matter what amount is taken. The pan feed conveyors are controlled by an operator who walks along a bridge over the pans as shown in the back of Fig. 9, and in section on Fig. 2. This man feeds all the pans. The system used in the conveyors is to have a metal lined conveyor box, and to pull the clay mixture along this box by means of double chain swivel flights. The iron flights are about 6 in. high and 24 in. apart. The double chain flights on the return side are shown on the lower part of Fig. 9. The pan feeder sets the pace, and it is the mixing man's business to keep the bins over the car full of clay, and attend to piling the incoming clay for storage as time permits.

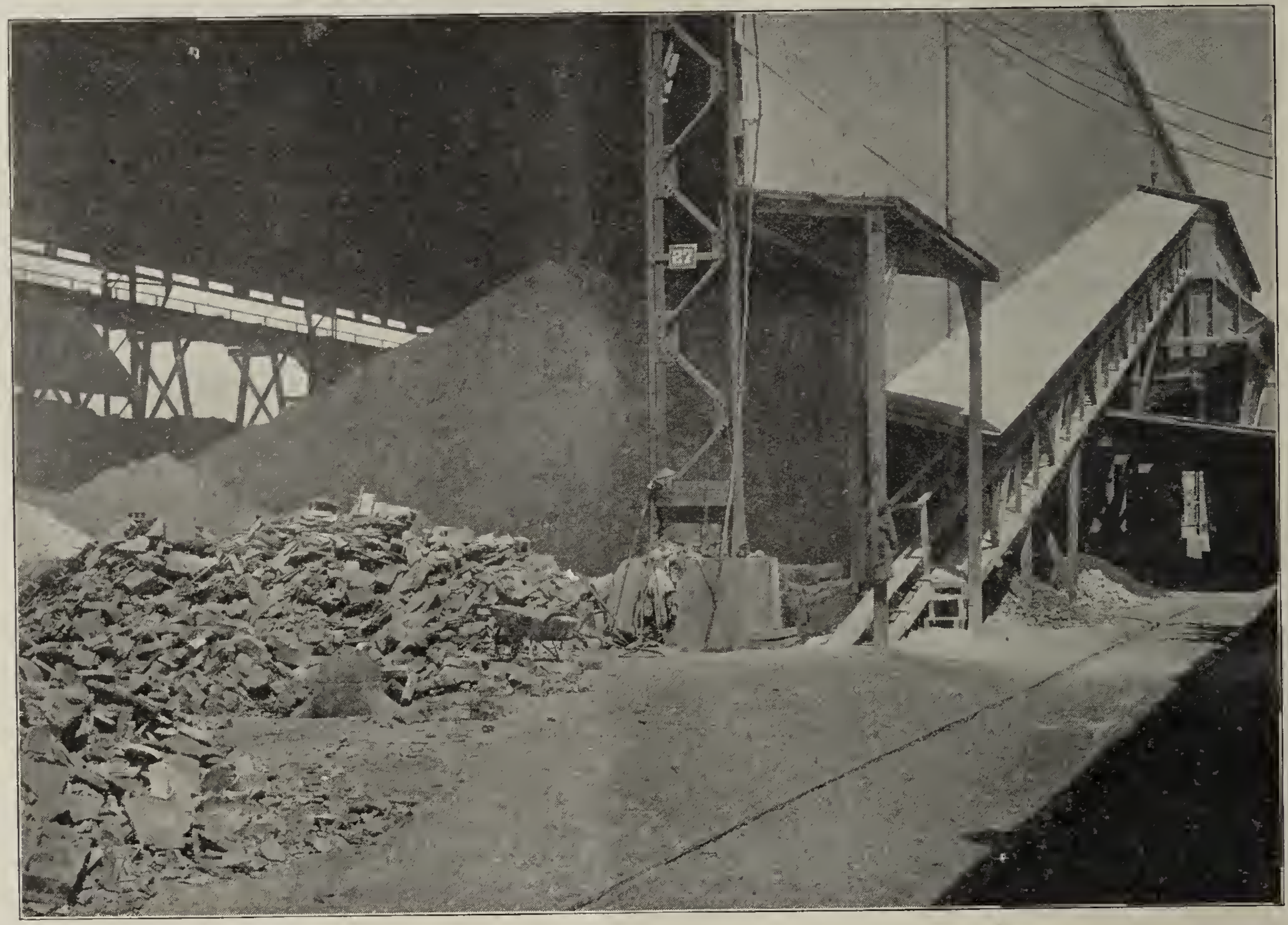

FIG. 6.

The screened and ground clay storage feed system inside the plant is equally interesting and works very well. Considering that these bins have to take care of different clays from different pans and supply several different kinds of machines, including two sewer-presses, two auger machines, a tile press, and various tempering machines for hand mold work, it can be readily understood that it required considerable study

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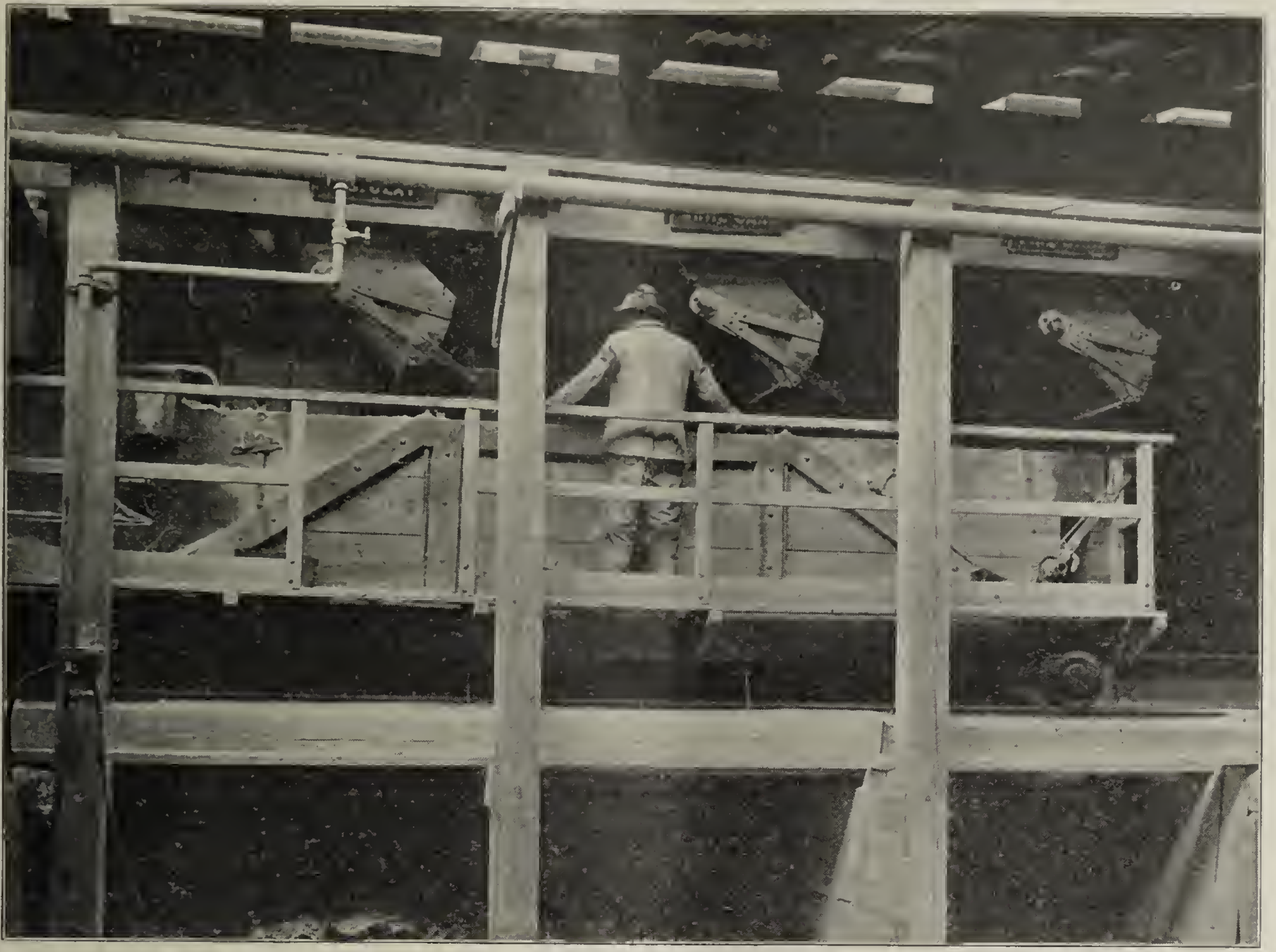


Figure 7.

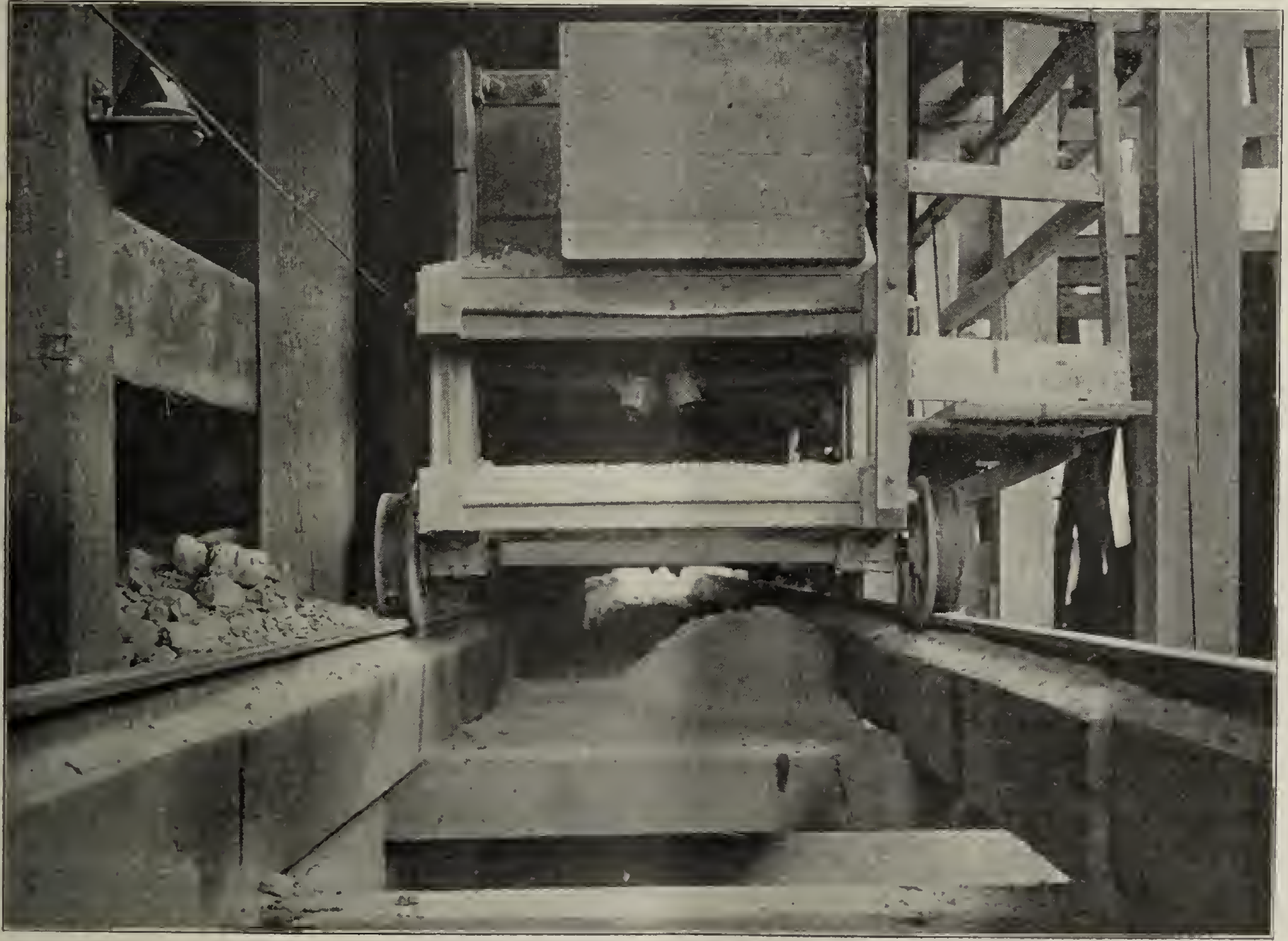


Figure 8.

to work the system out. That it does work is very evident from the fact that one man can take care of screens, bins, feed chutes, etc., and have time to clean up.

Mixing Necessary to Obtain Uniformity. No mention has been made of the thorough mixing the clay receives in the process. The steam shovel, of course, gives a good average sample of the vertical cross section of the bank. Dumping off the cars and re-piling in the shed gives an extra mixing, and in taking from the piles and putting into the overhead bins it

(Continued on Page 192.)

NORTHWESTERN CLAY MEN PROVE LIVE WIRES.

Stage a First-Class Convention January 17 and 18. Practical Talks Prevailed and the Discussions Generally Proved Helpful.

THE TENTH ANNUAL convention of the Northwestern Clay Association was held in the West Hotel, Minneapolis, Jan. 17 and 18. While the attendance was not large it was earnest and reperesentative. Practically every man attending was strongly interested in the proceedings either from the standpoint of a manufacturer or a salesman. The program committee is to be congratulated upon its skill in formulating a set of talks which struck home in every instance. The debate, while brief, was all to the point, and old-timers who have attended every meeting of the organization united in declaring that this was the best session ever held.

The talk of the president, B. Frank Pay, of Mankato, in opening the session, was forceful and to the point. He urged greater uses of clay products, whose use had hardly scratched the surface of possibilities. Clay men themselves should make more use of their own wares, including living in brick homes. He pleaded guilty himself to living in a frame house, but anticipated reformation in time. Clay men should cultivate the acquaintance of their neighbors so that they may be able to advise with them when they are interested in construction materials. Despite the war and the falling off of construction, he predicted that there would be some building during the war and an immense amount at the end of the war. All should keep their plants in order so that they may be ready for a rush when the end of the war comes.

F. B. Martin, Minneapolis, reporting for the committee on the reduction of fire insurance rates on brick structures, told of the unequal spread between a strictly fireproof dwelling, which cost at the rate of 24c a $100 and that of a frame dwelling at 32c, with stucco and asbestos roof between at 28c. For the committee he could report no progress, though some progerss has been made through other forces which are working on the same subject. The revision of rates must come through the Underwriters' Board, and is determined by the surroundings, contents, roof and other factors. The line of advance for lower rates is to interest the local agent to take it up with the general agents and thence to the national board. And if members want to have their roofing tiles tested the National Bureau of Standards will do it, unless the needs of war work have handicapped them, as they have made tests of brick and cement and other articles. Some of the tests by the bureau have proved uncomfortable for the cement men, as they have shown that material to be unsatisfactory for fireproof material in certain fires, such as one at a concrete elevator in Kentucky, which was found to have spalled badly under fire. Before insurance rates can be influenced there must be a better understanding with the Board of Underwriters. For the present there is no chance whatever of any lower rates, but instead they may advance. The National Board of Underwriters must know more about the fire resistance of brick first. This may come through the tests of the National Bureau of Standards.

The headliner of the program, as the dramatic writer would term it, was Judge John F. McGee, national fuel commissioner for Minnesota. He spoke of the fuel situation from the standpoint of his office. He told of the work of his department and its efforts to see that there was sufficient coal for the needs of the Northwest. His department had not attempted to interfere with the natural flow of coal until two weeks before, when it was found necessary to divide the stocks of coal on the docks into ninety allotments, to be divided among the states of the Northwest dependent upon the dock supply, releasing one ninetieth each day. With any sort of economy there will be sufficient coal for the winter. The Northwest, in the interior, is working back to the use of wood fuel as much as possible. There are 100,000 cords of wood on one Government section of land. The public safety commission has ordered the sale of dead and down wood on state lands at the rate of 25c a cord, with a maximum of 100 cords to any one person, as a step toward distributing the wood as far as possible. It must be used in the vicinity of the site, however, as freight rates make it too costly to ship any distance. It is quite necessary to use all the substitutes possible for coal this winter, for the prospects are that next year will see less coal brought forward to the Northwest than was the case this season. This war is for the purpose of saving civilization as we know it, and it is the duty of every man to do everything he can to forward our cause. As to prices, the conditions this year have permitted a wide variety of costs, for the price fixing power of the President did not run against contracts made prior to the passage of the Lever bill. But these contracts are for one year only, and the coming season there will be no prior contract figures, so that prices will be lower. He told of the trouble which had been encountered with unreasonable margins being charged, from $2 a ton to as high as $5.17 over the cost to the dealer at his bin. His office made an order January 10 reducing margins to $2. He declared that when the history of the war is written those who will be damned the worst will be the coal mine operators, whose prices have been unquestionably out of reason. The mine operator stood out for the best possible price and he made it. He spoke of the possibilities of Wyoming and Colorado coal being brought to the eastern markets, these coals being declared by some to be the best in the United States. But at present the rate on this coal to Pierre, 400 miles, is double that from Illinois, which is 1,000 miles. The Interstate Commerce Commission ordered a lower rate at one time, but never put the new rate into effect. He complimented the railroads upon their ability to get coal through to any town which is reported to be in urgent need of coal.

With reference to the five-day shutdown ordered on manufacturing, he was asked if a brick kiln which was started would have to close for the five days, to which he responded that he thought it would be no saving of coal to let it go down and have to use a great deal of coal to restore it to the proper temperature, and he would not regard such a situation as calling for a shutdown, but that a kiln should not be started burning to run into the five-day shutdown.

Another very interesting talk was that of D. D. Lescohier, of the Public Employment Bureau, Minneapolis, maintained by the State for the purpose of furnishing men with work, and employers with workers, all without charge to either. The labor situation as a whole was described as being one in which there was no serious shortage of labor as to quantity, but a decided shortage as to quality. Labor has been drifting from one job to another until the floating variety is poorer and poorer, and it is of this class that much of the seasonal labor has to come. The efforts of the bureau, which maintains offices in Minneapolis, St. Paul and Duluth, is to bring work and worker together. The shortage of skilled labor is not wholly a war development, but has been averted because of immigration. This has ceased during the past few years, and as a result there is but a limited amount of skilled mechanics available. This country has about 500,000 floating laborers—transients with no permanent home, no family. They are largely American born. They are the products of their own bad habits and deteriorate constantly. The labor problem costs money to employers. It costs money to hire and to fire, and to break in new men. The employer wants permanent men. The losses sustained by employers in excessive turnover of labor amounts to millions of dollars. It costs from $50 to $200 per man to make changes. Labor must be paid the going wage, and must not be abused if it is to be satisfied. One instance was cited of a large construction job which had men going and coming constantly. Investigation showed that they had a poor cook, although the materials furnished were the best. They put in a competent cook, and their turnover decreased sharply. Another case was of an abusive foreman who drove men away. The best way to handle labor is for the employer to hire and fire, or if this can not be done, to have the men quitting or being fired to report to the employer and be questioned as to the causes as a means of keeping in touch with the situation in the labor department. A season bonus is a good means of inducing men to stay the season out. There is a great deal of stealing men from one institution to another. The same thing has been done in Washington to such an extent that a presidential order has stopped transferring clerks from one department to another without approval. He objected to the ordinary employment agency which encourages changes, for it is the only way that these institutions make any money. They encourage men to change, and are a bad factor with workmen. The trouble is with the dull and active seasons, which require that men move to other work during dull periods.

F. W. Sardeson, of Minneapolis, gave an interesting talk on Minnesota clay development, touching on the geological formations of clay deposits of the State. He told of the different clay deposits and of their analyzed value and also their practical worth. It had proved that the practical use is often different from the showing of an analysis.

A. L. Crocker, of the Reclamation League, gave a brief talk on the projects of the league, which include state-wide drainage, reforestation of all waste land; soil survey and fish and game development.

The Banquet.

About one hundred and fifty sat down to the banquet. Miss Frances Works gave a number of readings, which were patriotic largely, and greatly enjoyed.

Capt. W. S. Drewy, of the Canadian forces, gave a brief point of the experiences which he had at the war front, and told of the work of enlisting all Canadian subjects in the United States who have claimed exemption under the United States law, because of being British subjects. There is no intention of interfering with the enlistments in the United States army, but where men claim exemption the British army wants them. He was followed by Lieut. O'Grady, who told of his experiences in being made a prisoner and was finally interned in Switzerland until exchanged. Both presented the situation with reference to the war, and the things which the Allies are fighting in a clear, cogent manner.

Judge Harry Johnson, of Mankato, Minn., gave a running fire of jokes, stories and anecdotes, which convulsed the crowd. He was followed by "Eddie" Rosengreen, of Minneapolis, whose reputation as a raconteur is high. Both kept their hearers constantly in laughter.

Friday morning's session opened with a very interesting talk by J. R. Ewing, of the Western Weighing and Inspection Buureau of Chicago, on the proper way to load brick and tile to ride with the minimum breakage. He favored greater care by employers in superintending this work as being a sure way to assure delivery of product with minimum breakage. In laying in brick joints should be broken, as in laying up a wall, to assure safety from working loose with the motion of the car. With hollow tile the same thing should be done, to guard against spreading and crushing. In circular tile, care must be taken to prevent the sides of the car from springing and allowing the tile to sink and then be forced up again when the sides draw in again. Bulkheads and gates should be used to prevent play back and forth. There should be uprights set in at the end of tiers laid lengthwise of the car to keep the section opposite the doors from being crushed, since this section is laid in crosswise of the car, and the center of a tile is weaker than the ends, resulting in much damage to the middle section of the car unless the tile are so protected. The use of lath gates to separate tiers and of bulkheads and uprights costs a little, but is well returned in the freedom from breakage and the satisfaction of the customers. Sewer pipe should be laid with strips on the floor to hold the pipe off the floor to the height of the bell. There is a demand to load heavier and it calls for more attention to prevent greater losses from heavier loads. One firm increased its loading weights by 15 per cent, and reduced its breakage at the same time. They used 100 less cars and shipped the same tonnage.

It was suggested that many shipments get through to destination in good shape and are then smashed, when partly unloaded, by switching crews throwing in other cars which bump the partly unloaded car, throwing down the contents and breaking them. Mr. Ewing said that the matter was undoubtedly true, and that railroads should protect such shipments, as they have to pay for such damage.

C. B. Platt, of Iowa, was down for an address on "The Organization of An Industry," but was called to Washington at the last minute to confer with Government authorities on the coal situation. His paper was read before the convention and was greatly appreciated. It was substantially the same address which was delivered before the Iowa association last winter. He urged co-operation upon stocks and conditions, and the establishment of a fund for the development of business. He urged the use of the open price policy. The suggestions were referred to the incoming officers.

A live-wire talk was given the crowd by F. B. Martin, of Minneapolis, on "Brick Markets." He regarded the ordinary market of a yard as restricted by freight rates, but an unusual market should be developed. People must be interested in brick to a greater extent than has yet been the case. The seller must be sold himself before he can sell the buyer. The manufacturer must be convinced that brick makes the most desirable material before he can interest the buyer. Country dealers are able to check up intending builders closer than those in the city, since they have a better and more intimate knowledge. He urged the use of attractive architectural designs, telling of two homes in Minneapolis, both of brick, one of which had an attractive architectural arrangement and was well set off with shrubbery, while the other, although a more expensive house, did not give so good an appearance. The result was that the smaller and cheaper house attracted favorable attention where the larger one failed.

Clark Fletcher, of Minneapolis, told of the war loan campaign and why it was necessary to urge these thrift stamp and bond campaigns.

J. A. Glandon, of Mexico, Mo., told of requirements of fire brick in furnaces and kilns, giving many helpful hints about the use of fire brick.

A paper was read from E. A. Hults on "Why Brick Plants Lose Money," which was listened to with careful attention. Mr. Hults has gone into the aviation service and could not be present.

The report of the secretary-treasurer showed a small balance on hand of about $44 after all bills were paid. It was voted to pay Mr. Smith, the secretary, $25 for his faithful work during the year.

Secretary Smith pointed out that the dues of $3 a year were hardly sufficient to pay expenses and left nothing upon which to work. He moved that they be raised to $5 a year, which carried without a dissenting voice.

C. A. Gunn, secretary of the Northwest Face Brick Association, told of the formation of the Face Brick Association and of the good work which it had accomplished in eliminating abuses which had crept into the business. It was the development of co-operative competition replacing destructive competition—the use of the open price policy and an open and above-board attitude generally. It is not contrary to the Sherman Anti-Trust Law to meet and compare prices, to tell what has been done and to compare experiences, but it is illegal to agree to attempt to fix or control prices.

John T. Harrington, of the Twin City Brick Company, St. Paul, who has been president of the Face Brick Association for the past year, told of the suspicions which existed in the trade for the first few months of the association, but as time went on the members began to acquire confidence in each other. The credit department helped as it began to bring in money for accounts which were over sixty days old, resulted in the buyer going on the cash list. Open prices are all filed and each knows what the other is charging. The association has cut out grafting advertisements in church fair programs and other like affairs and has accomplished great good.

Senator Leitz, of the Hebron Fire and Pressed Brick Co., Hebron, N. D., told of the unsatisfactory lien law of North Dakota, which requires that for a lien to apply the owner must agree to guarantee the order and permit the lien if the claim is not paid.

The election of officers resulted in the following:

President—R. H. Smith, Minneapolis.

Vice-President—C. K. Willard, Heron Lake, Minn.

Secretary-Treasurer—Harry W. Linder, Soo Line Building, Minneapolis.

Executive Committee—C. J. Swanson, Minneapolis; A. C. Ochs, Springfield; Jacob Voelker, Winona; Henry Hess, St. Cloud; W. T. Hadsen, Hutchinson.

The resolutions committee reported as follows:

Resolutions Committee Report.

First. Whereas, the date of the annual meeting in January brings us in conflict with other organizations and brings the meeting at a time when some of our members wish to be away for the winter; therefore, be it

Resolved, That we recommend to the association that a meeting date for some time in December or earlier be considered.

Second. Whereas, our season of manufacture is limited to the warmer months; be it

Resolved, That we approve the work of the Public Employment Bureau in seeking to adjust employment to bring work and workmen together with the least loss of time.

Third. Whereas, complete records of production would be a great aid to the manufacturers of common brick, we recommend that the association name a committee whose duty it shall be to collect data of stocks on hand, month by month, in the yards of manufacturers, the figures of each to be kept secret and the totals only to be furnished members, as an aid in their marketing and selling.

Fourth. Whereas, complete details of cost of manufacture and selling are greatly needed, we recommend that a committee be named to develop a showing upon this line, the same to be presented at the next annual meeting.

Resolved, That the thanks of the association be extended to the retiring officers for their faithful work during the past year.

Resolved, That the thanks of the association be extended to all those who participated in our programs, to the management of the West Hotel and others contributing to our entertainment and comfort.

Resolved, That we heartily endorse the sentiment to increase food production indicated in the slogan, "Put the Idle Acre to Work," and urge our neighbors to bear this in mind as one of the many ways in which we can do something toward helping the Government in the war.

Resolved, That we favor the development of the Northwest in every respect to the end that there may be a bigger and better Northwest for our homes and our families, and we endorse the plan of the Reclamation League of statewide drainage, reforestation of waste land, soil survey and fish and game conservation.

NEBRASKA BRICK MEN MEET AT LINCOLN

THE annual convention of the Nebraska Brick and Tile Manufacturers' Association was held at Lincoln, January 29, 30 and 31, and was most successful both from the standpoint of attendance and interest in the papers and discussions. Part of the sessions were held in the Mechanical Engineering building of the University of Nebraska, and the rest at the Lincoln Hotel.

At the first session, which was held at the university, Prof. O. R. Martin presented to the members a new accounting system well adapted to the needs of the brick and tile manufacturers.

The new system was first suggested by Frank I. Ringer, when he made some introductory remarks before the beginning of the program for the afternoon. Later, Professor Martin presented a concrete plan, adapted to the needs of the brick and tile men of the state, whereby each man can compute his operating expenses, his profits and the amount of tax that he will be required to pay under the new law. It was pointed out that if a sufficiently large number of business men adopt some such system, the number of revenue officers needed by the government will be considerably reduced.

Prof. L. M. Chase told something of the extension department in connection with the business of the state. He took the place of I. D. Wood, who was unable to be present for his part in the program.

An effort will be made to unite the Brick and Tile Association with the Nebraska Manufacturers' Association, as a branch society.

Secretary Ringer is connected officially with the Nebraska Manufacturers' Association and will render valuable assistance in that connection.

A. H. Connoly, who was scheduled for a talk on the details of plant arrangement, was unable to be present at the meeting, and a general discussion of practical problems was held during the time allowed for his talk. Technical details of the management of both the large and the small plants came in for consideration.

Instead of a banquet with formal speeches, etc., on Tuesday night, an informal dinner was given, the feature of which was "Nebraska Resources in Moving Pictures," by N. A. Bengston, of the Resource Commission of Nebraska. The western section of Nebraska was pictured in a most interesting way; this included illustrations of the new wheat belt that has been developed in that section; also illustrations of the cattle industry and also of the potash factories at Antioch. The potash industry was of especial interest, representing as it does one of the remarkable developments that has come to western Nebraska in the last few years.

The Wednesday morning session was held at the hotel, when the election of officers took place, as follows: C. B. Hutton, of Hastings, president; R. W. Besley, of Table Rock, vice-president; Frank I. Ringer, secretary-treasurer. A. H. Farrens, of Lincoln; Henry Ohlsen, of David City; Frank Burnham, of York; B. Koehler, of Geneva, and H. Polenski, of Hastings, were made the executive committee of the association for the coming year.

W. O. Gundlach, advertising manager for the Nebraska Farmer, spoke to the members on the subject of "Selling the Farmer." "Government statistics," said Mr. Gundlach, "show that $10,000,000 are invested in farm houses each year. Some one is to bid for this business. All manufacturing industries that manufacture building materials are bidding for this business, except the brick men. The increase in Nebraska farm buildings during the past ten years has reached the enormous figure of $108,000,000."

Mr. Gundlach urged the brick men to get in line and get their share of the business. "While you have commenced this advertising proposition, you should keep it up. The farmers need the material and substantial structures should be built," said Mr. Gundlach.

"Nebraska has the material, and there is none better in the United States than Nebraska has, with possibly one place, where the light-faced brick of various colors are made, than has Nebraska," the speaker continued. "Brick for the buildings and hollow tile for the draining of the wet lands to make them suitable for farming, is what should be secured by the farmers."

Mr. Gundlach's address brought out considerable discussion, which continued until the dinner hour, when the company adjourned to the Commercial Club rooms.

Professor Martin's accounting system was again taken up at the afternoon session, and after some discussion it was voted unanimously that those present should adopt the system, and an effort will be made to have other manufacturers throughout the state follow suit.

Ballard Dunn, special representative of the Union Pacific Railroad, spoke on the transportation problem now confronting the people of the United States and the world. "Our transportation problem cannot be separated from the problem of the entire world," said Mr. Dunn in his talk. "When there is a shortage of equipment in Europe, material that had been prepared for our roads is shipped there instead, and the result is a delay in operating our own roads. Last year the Union Pacific ordered eighty-five locomotives for delivery during the year. The full number was manufactured, but few went to the Union Pacific. The rest went to France to assist in carrying supplies to the men at the front."

Mr. Dunn also called attention to the direction in which traffic is now moving. Before the war the current of freight was from the east to the west; since the outbreak of the war the direction has changed and the roads are now moving freight from the west to the east. The lack of balance in shipping is responsible for a part of the congestion of freight.

Prof. L. F. Seaton, head of the mechanical engineering department of the university, talked on "The How of Saving Fuel and the Brick Dryer." He discussed the coal problem, both from the standpoint of the small domestic consumer and the large consumers in the brick and tile yards. He reminded the men that 20 per cent. of the coal mined in this country goes to warm the homes, and stated that one shovelful a day saved at each furnace or each stove would result in the saving of 13,000,000 tons. He urged stringent economy, especially in connection with the "tag your shovel day."

He later took up the different methods of drying brick and called attention to the advantages of each type of dryer. He reminded the men that they would be able to operate their plants all through the winter by making use of the dryers, and that in that manner they would be able to supply the winter demand for brick and tile.

This was followed by a talk by Prof. L. M. Chase, of the College of Agricultural Engineering of the Nebraska Engineering, giving suggestions for future work by the Association.

The convention adjourned late in the afternoon, the members generally voicing the sentiment that the 1918 convention was the best the Association has so far held.

CANADIAN CONVENTION WELL ATTENDED.

THE sixteenth annual convention of the Canadian National Clay Products Association was held at the Prince George Hotel, Toronto, January 29, 30 and 31. There was a good attendance and an enthusiastic discussion on the various papers presented.

The meeting was opened on Tuesday afternoon, January 29, by Rev. Andrew Imrie. The chair was occupied by Thomas Kennedy, Mr. Greaves-Walker, the president, being detained en route due to the big snow storm of the Monday previous. Mr. Kennedy in a few well-chosen words welcomed the members to Toronto.

Thomas Kennedy.

Wm. Burgess.

Gordon C. Keith.

The secretary-treasurer's report, which was then presented, showed a working balance on hand. The following is the executive elected for the ensuing year:

Past President—A. P. Greaves-Walker, Baltimore, Md.
President—Thomas Kennedy, Swansea.
First Vice-President—William Burgess, Todmorden.
Second Vice-President—Ryland H. New, Hamilton.
Third Vice-President—G. Angus German, Toronto.
Secretary-Treasurer—Gordon C. Keith, Toronto.

Councillors—Chas. B. Lewis, Toronto; John S. McCannell, Milton; J. Edward Frid, Hamilton; Walter Clark, Corunna; N. T. Gagnon, Montreal; T. H. Graham, Inglewood; Andrew Dods, Mimico, and Chas. A. Millar, Toronto.

Chairman Technical Education Committee—Millard F. Gibson, Toronto.

Chairman Entertainment Committee—Charles A. Millar, Toronto.

The following program was then carried out:

(1) "Kiln Konstruction Kinks," by W. G. Worcester, secretary of the Alberta Clay Products Manufacturers' Association, Calgary.

(2) "The Relation of the Economic Geologist to the Clay Industry," by N. B. Davis, B. Sc., M. A., Kingston.

Wednesday Morning and Afternoon.

(3) "Producer Gas-fired Dryers," by R H. McElroy, International Clay Machinery Co., Dayton, Ohio, based on experiments by Profs. Parmalee and Hursh, at the University of Ilinois.

(4) "Sewer Pipe Manufacture," by F. Coleman, M. B., of the Hamilton and Toronto Sewer Pipe Co., Hamilton.

Discussion opened by Andrew Dods, of Ontario Sewer Pipe Co., Mimico.

(5) "The Drain Tile Situation in Ontario," by W. H. Scott, B.S.A., drainage demonstrator of the Ontario Agricultural College, Guelph.

Prof. Scott pointed out in his paper that "The land owners and farmers look to the manufacturers for their supply of tile, and if they are unable to produce all the tile required, the work of drainage and reclamation of land will suffer, and just so much as that suffers, there will be less grain and other agricultural products produced, when greater production is, at present, so necessary."

(6) "Difficulties in the Manufacture of Clay Products," by Dr. L. L. Plant, Georgetown.

(7) "The Workings of the Workmen's Compensation Act and How Assessments are Determined for the Different Classes," by Samuel Price, chairman of the Workmen's Compensation Board of Ontario, Toronto.

Mr. Price was tendered a hearty vote of thanks for his paper. A motion was also passed requesting the Executive to discuss with Mr. Price the question of merit rating and redistribution of classification in so far as the clay industry is concerned, and obtain information showing how the monies paid by the clay industry meets the cost of accident and claims in this group.

(8) "Refractory Materials in Canada," by Joseph Keele, B.Sc., chief engineer, Ceramic Dept. Mines Branch, Ottawa.

(9) "Application of Electric Motors in the Claymaking Industry," by Kenneth C. Berney, B.Sc., of the Canadian Westinghouse Co., Hamilton.

Mr. A. F. Greaves-Walker arrived in time to take the chair at the close of the Wednesday afternoon session, he and Mrs. Walker being three days on the train coming from Baltimore.

Banquet Wednesday Evening.

The banquet, held Wednesday evening, was a great success, over one hundred members and guests being present. Joseph Russell, M.P.P., with his ready wit and apt comments, made an ideal toastmaster. There was a good program of speeches interspersed with lively songs and recitations. The guests of the evening were Mayor Church, Rev. A. Logan Geggie, and Miss Margaret Davidson. The following was the toast list:

Canada and Our Allies—Proposed by Mayor Church, who has done so much for the soldiers, and responded to by Lieut. F. B. McFarran, a returned hero who has again resumed the business of brick manufacturing, and A. F. Greaves-Walker, who is now residing at Baltimore, Md. He pointed out what the United States is doing to aid the Allies.

The Clayman—Proposed by W. G. Worcester, and responded to by Rev. A. Logan Geggie.

The Ladies—Proposed by Frank R. McCannell, and responded to by Miss Margaret Davidson, who spoke on "Women's Influence in National Development."

Thursday, January 31.

(10) "Burning by the Use of Forced Draft and Low Grade Fuel," by W. G. Worcester, who described how lignite and the poorer grades of bituminous could be used to cut down costs and conserve the fuel supply. The discussion on these two papers occupied the whole morning. The afternoon was devoted to the discussion of the following "Question Box" conducted by A. F. Greaves-Walker:

(a) What can be done to speed up tile production?

The discussion on this question resulted in a motion for the Executive to appoint a committee to interview the proper Government authorities to see if some arrangements regarding distribution could not be obtained, whereby idle brick plants could be used to make tile, and supply it to districts where there is no local supply.

(b) What is the best method of artificial dryers for small manufacturers?

(c) Discussion on "Kiln Ideas to Save Coal."

(d) Reconstruction of down draft kiln—what relation should furnace level bear to floor kiln?

(e) Nova Scotia Coal vs. U. S. coal for firing refractories.

(f) Market in Canada for refractories. Introduced by Joseph Keele.

(g) Is it as cheap to use crude oil in firing boilers as coal?

(h) What are the prospects for the brickmaker after the war?

(i) Natural gas at what price per 1,000 ft. would be equivalent to mixed wood at $5.00 per cord.

(j) What are best means of distributing waste heat under a three-story slatted-floor tile dryer, and is it practicable to recirculate the heated air through the ware a sufficient number of times to insure its containing at all stages of the drying all the moisture it will carry before passing off; if so what are the best means of recirculation to employ?

A number of these papers will, no doubt, prove interesting to our readers, therefore we will reprint same in some of the subsequent issues. We are indebted to the Canadian Manufacturer for the above summary of the convention proceedings.

REVIEW OF WISCONSIN CLAY MAUFACTURERS ASSOCIATION CONVENTION.

TWENTY-NINE royal good fellows who came to renew old friendships and form new ones and to give to or learn from the other manufacturers points of mutual benefit in advancing the progress of his trade, met in annual convention at Milwaukee, Thursday and Friday, January 31 and February 1. Weather conditions similar to the year previous prevailed and though the thermometer was registering about the 18 degrees below mark, there was a warmth inside the Republican House which made one forget the outside conditions, until some fur clad individual made his appearance. The extreme cold weather and record-breaking poor train service, kept down the attendance, but this was more than made up for in the results of the deliberations. Every delegate returned home amply repaid for the time spent and firmly resolved that the other manufacturers of the state should learn of the fruits obtainable and their loss in not being present.

The outstanding features of the convention were the discussions on the coal and car problems, methods of saving fuel and labor, benefits derived from the thrift movement and the adjusting of the industry to meet the war conditions. Especially were the delegates interested in the talks of Messrs. Morgan and Fitzgerald, the latter being the State Fuel Administrator.

Thursday morning was given over to the registration and glad hand work, incident to the waiting for the arrival of delayed delegates. The convention proper was called to order Thursday afternoon by President Oscar Zimbal of Sheboygan.

The reports of the Secretary and Treasurer showed the Association to be in a fair financial condition. Secretary Weidman urged the need of larger attendance and the increase of membership. This matter was taken up in a most thorough manner at the close of the convention. After reports of the several standing committees, President Zimbal read the following address:

President Zimbal's Address.

"Some of you are listening for the eighteenth time to the address of the President of your Association and therefore discretion prompts me to make way for the more pressing business of the convention.

One matter I would like to bring to the attention of the Association which, however, refers more to our absent ones, is the necessity of attending conventions.

As to the immediate benefits of these meetings, I feel the greatest good derived has been in the promotion of good fellowship and understanding. No time and money spent during the entire year is used to better advantage than the few days we meet here in social intercourse, and if there ever was a time in the history of our country when manufacturers should get together and co-operate for self-protection, now is that time.

We should concern ourselves not so much with the immediate material benefits, which are to accrue to the members, but with those intangible benefits to be derived. For many years there has been a growing feeling among business men that their lives were sordid and in some respects unreal, they realize, perhaps often not clearly, that the greatest thing in life cannot be measured in terms of dollars. Each man's business or vocation is the means by which he can render the greatest possible service to mankind.

The material advantage derived from any association depends upon the extent of co-operation of its members. This Association should not only be a collection of men meeting once a year to read and discuss papers prepared for that occasion, but should be a bureau of information on all topics pertaining to the clay industry of this state and this information must be furnished to the Association by its members.

The program gives evidence of care in its preparation and I predict that the papers and discussions will take rank with any previous meetings of the Association."

Oscar Wilson, Menomonie, made an informal talk on the cost of manufacturing brick under war conditions, which reviewed the difficulties of getting coal and labor and urged the necessity of more careful attention to details to overcome the prevailing conditions which he thought would last for some years to come. He made the suggestion that older men be secured in the several branches of the work in order that the labor would not be hindered by the draft.

"Some Methods of Conserving Fuel in Burning," was the subject ably handled by Lambert Haigh, of the American Clay Machinery Co., Bucyrus, Ohio. Mr. Haigh was very optimistic regarding the future of the clay industry and stated that the clay products manufacturer was just beginning to live. The sentiment for permanent building and homes made of clay products is stronger today than ever before and while the conditions after the war will not bring us cheaper labor or much cheaper coal, the demand for our material will be such that higher prices will prevail in the proper ratio to take care of the increased costs. Immigration to the old country after the war will effect labor so that all labor saving devices, where practical, should be used. The conservation of fuel is an absolute necessity, therefore, the clay products manufacturer should adopt those methods which will permit the drying and the burning of them in the shortest and most economical time. Mr. Haigh stated that he felt sorry for the man who used the scove kiln for there was not much chance for saving. The man who has a round down draft kiln has many opportunities to save while the continuous kiln is the most economical. His advice in economical ways of burning was—keep the fire box free from clinkers, and allow more air for combustion,—fire lighter, let coal burn low before refiring, it being better to fire light twice than fire heavy once, let in plenty of air, if you have tender clay build the bag walls higher. Get the full value out of your coal by making the air do its work well. The same is true in regard to firing the boilers. Mr. Haigh recommended the dampening of the coal if it is very dry. This method gives additional heat with more oxygen in the kiln and a longer use of the coal. As a final reminder he said, "never burn your kiln till the bottom is hot."

There was a long discussion following this talk in which a few words were said by Mr. Geo. Kennedy, of Green Bay, a former staunch member, who is now in the house moving business. The older members were delighted to have him with them again, his humor and good advice adding to the value of the session. In this discussion on burning, President Zimbal, as well as John J. Moroney of Chicago, described the use of oil in the burning of brick. The use of coal dust and ground up ashes in clay were mentioned. The most interesting part of the discussion was by Mr. Anton Stiel of the Jefferson Brick & Tile Co., Jefferson, Wis. He gave his experience of 50 years in the brick business. A few of the wise expressions he made were, "when you can save time you can save fuel," "the center of the kiln is the hardest to get first, the center keeps the water smoke the longest, you can save two days on the water smoking by getting the heat more rapidly to the center by induced draft." "Set the kiln in the center on fire first by the use of the best slack you can get, placing it in the center and four feet on either side, thus producing heat in the center first." Mr. Stiel stated that he started his fires in the center of his scove kiln first, using hemlock, while the side fires were started 24 hours following the heating of the center arches. At the close of his remarks he talked of the advantages of knowing the real cost, stating that nine out of ten did not know their costs. He gave his cost records item by item, going even into the most private accounts of his business. He showed that the average cost of his ware was over ten dollars.

Thursday evening the delegates were entertained with a wholesome meal at 6:30 o'clock. The long table was attractively decorated and each course was served in the best of fashion. The after dinner speeches were confined to two talks by able men, Mr. John Ringle, acting as toastmaster. Mr. Morgan, a Milwaukee attorney in charge of the thrift movement in his section of the state, made a talk dealing mostly with the sale of war saving certificates and thrift stamps. In his opinion, every man should give his surplus earnings for helping end the war—buying Liberty Bonds, Thrift Stamps, etc. He should not only spend his money in this way, but should devote considerable of his time to this work. The raising of two billions of dollars for the government is only a small part of the work. The government is looking forward and realizes the importance of educating this luxury-loving nation in the matters of thrift. It is the best thing that could happen to the banks, for in five years when these thrift stamps are paid there must be some place to put them and in the meantime the idea has been instilled into the minds of the American people that thrift is the making of fortunes and well being. The thrifty man in the future will be the best man for any community.

Mr. M. N. Fitzgerald, State Fuel Administrator of Wisconsin, spoke entertainingly of the coal industry, showing its rank and three phases, namely: Production, Distribution and Price. He told of the amount of coal on hand, stating that the railroads used one-third and cited the various fields where coal was much in demand. He told of the shipments of coal to Canada and how it affects our condition and pointed out just how the coal situation was being relieved. He referred to the methods of speeding up shipments, including pooling and co-operation, told of the labor shortage, the lack of storage facilities and poor car supply and showed that there were many ways in which to save fuel. He compared the use of coal in this country with that in Germany. The overheating of rooms, flats and office buildings is criminal and especially is this true when we analyze conditions and find the many places where heat is wasted, and the absolute lack of it in others. He mentioned the fact that one large office building was being heated on the excuse that two art students took lessons in that building. He pointed out the suffering in the country and cited how little we realize the conditions. Germany only allows certain portions in the house to be heated and those places only to 60 per cent. Coal in Paris is selling for $100 a ton, while in Italy it is costing $40.00 per ton. He was optomistic regarding the early change for better coal and car conditions and stated that the government was doing all in its power to correct the trouble.

Friday morning the convention was entertained by a splendid paper by Prof. O. L. Kowalke of Wisconsin University on the subject, "Fuel Values of Various Coals, Oil and Producer Gas," which we are pleased to publish entire in another place in this issue.

"What Should the Clay Manufacturers Do to Meet the Shipping Problems?" was the title of a paper read by Mr. J. E. Randall, junior editor of The Clay-Worker, Indianapolis. In this paper the writer stated that it was the manufacturers' first duty to do everything in his power to help win the war and that it was up to him to help solve the transportation facilities as well as the government to help him. The motor truck was suggested as a sure means of taking care of short hauls and thus relieving the cars which were tied up for days in making local deliveries by circuitous routes. Other means were cited to help the government in the solving of the transportation problems.

An interesting talk by Mr. John Ringle, Wausau, on "Adjusting Our Industry to War Conditions," was a patriotic speech advocating no hindrance to the work of the government in ending the war at the earliest possible time. He referred to the suggestions made by previous speakers and stated that every manufacturer should pay more attention to details of his business now than ever before and to take advantage of every method that would save labor and fuel.

Folowing an adjournment for lunch, the delegates met in the final session, where purely business matters of the Association were considered.

As recommended by Mr. Randall, the state was divided into a system of zones and representative manufacturers were appointed by the Secretary from each zone, who were to visit with their fellow manufacturers, explain the benefits, need of co-operation and endeavor to bring at least one new member to next year's meeting.

By agreement, The Clay-Worker will publish reprints of Prof. Kowalke's paper and these will be distributed throughout Wisconsin, a part of the campaign for larger membership.

Mr. Weidman, who has been untiring in his efforts for the Wisconsin clayworkers, was presented with $50 as a token of the high regard in which he is held by the Wisconsin clay products manufacturers, and a definite salary basis was made over his protest. Every delegate present left with the feeling that next year will be a record breaker convention in regards to attendance and program.

The following delegates registered:
J. Ringle, Ringle Brick Co., Wausau.
Oscar Zimbal, Oscar Zimbal Brick Co., Sheboygan.
Oscar Wilson, Excelsior Brick Co., Menominie.
L. Haigh, American Clay Machinery Co., Bucyrus, O.
Chas. E. Paeske, Burnham Bros. Brick Co., Milwaukee, Wis.
Louis Hylland, Northern Lumber Co., Stanley, Wis.
Ed. Fricke, Manitowoc Clay Co., Manitowoc, Wis.
A. W. Hilker, Hilker Brick Co., Racine, Wis.
L. H. Cordes, Larson B. & T. Works, Watertown, Wis.
Thos. Larson, Shawano, Wis.
John J. Moroney, Chicago, Ill.
G. W. Kennedy, Green Bay, Wis.
Erwin Fricke, Manitowoc, Wis.
Leo J. Sheridan, Chicago, Ill.
M. DeBoer, Milwaukee, Wis.
Ed. L. Koenig, Chicago, Ill.
Gunther Bros., Port Washington, Wis.
H. W. Carter, Cook and Brown Lime Co., Oshkosh, Wis.
S. Weidman, Wisconsin Survey, Madison.
A. O. Zerrenner, Zerrenner Bros., New London, Wis.
G. E. Burnham, Burnham Brick Co., Milwaukee, Wis.
Anton Stiel, Jefferson Brick & Tile Co., Jefferson, Wis.
G. Brubaker, H. Brewer & Co., Tecumseh, Mich.
J. E. Randall, The Clay-Worker, Indianapolis, Ind.
H. W. Carson, Keystone Driller Co., Chicago, Ill.
J. M. Borough, Kalamazoo, Mich.
R. G. Kine, Acme Brick Co., Milwaukee, Wis.
F. E Poels, Green Bay, Wis.
Kemmeter Bros., Jefferson, Wis.

THE FUEL VALUES OF VARIOUS COALS, OILS AND PRODUCER GASES.

By O. L. Kowalke.

THE RISING COSTS of fuels have stimulated a study of their relative values, a closer scrutiny of the quality of each consignment, and the suitability of even low grade varieties.

To aid in this consideration of fuel values a brief discussion of the location of the principal sources of fuel may be of interest. Coal is very widely distributed throughout this country. In general the deposits are in four large areas:

(1) The Appalachian field, extending from Pennsylvania to Alabama and including Ohio.

(2) The Illinois and Indiana field.

(3) The field west of the Mississippi, extending from Iowa to Oklahoma.

(4) The Rocky Mountain field.

The fields of interest to consumers in Wisconsin are the Pennsylvania, Ohio and Illinois fields. The Pennsylvania and Ohio coals come to Wisconsin via the Great Lakes, and the Illinois coal must be hauled by rail.

Closely associated with the coal fields are the valuable oil deposits. The Pennsylvania and West Virginia fields lie at the western edge of the coal deposits and are more or less intimately associated with them. There is a field extending northeast and southwest across the northwestern part of Ohio and into Indiana; another field is in the southeastern part of Illinois. The great producing field of the United States extends from the southern part of Kansas through to the Gulf of Mexico. Wyoming has recently come in as a large factor in oil production. West of the Rocky Mountains is the California field, located near Los Angeles.

For some regions in northern Wisconsin, wood is still an important and economic fuel.

Characteristics of Fuels.

It will be of interest at this point to discuss the characteristics of various types of fuels.

Coal is undoubtedly our most important fuel. It is believed that coal originated from vegetable matter through a process of decay, associated with temperature and pressure. It is difficult to say which of the coals in the United States were laid down first, but there is a marked difference between the coals found in the eastern and the western fields.

Coals are classified in general as lignites, bituminous or soft, semi-bituminous or smokeless, and anthracite.

Coal contains:

(1) Moisture.

(2) Inert matter commonly called ash.

(3) A solid constituent known as carbon.

(4) A pitchy-like substance producing gas or volatile matter.

All are intimately mixed to form the black, shiny substance. When heat is applied to coal and its temperature is raised to 215 degrees F., the first result is the expulsion of the moisture. As the temperature of the coal is raised higher, gas and vapors come off in increasing amounts, until at about 1,900 degrees F., when this expulsion is practically complete. These gases and vapors called volatile matter result from the distillation of the pitchy portion of the coal. Some of the vapors when cooled out of contact with air form what is known as tar. Tar when heated hot enough will form gas, due to a breaking up of the tar. The portion of coal left after driving off the moisture and volatile matter, consists of carbon and earthy matter called ash.

A chart has been prepared showing the relative amounts of moisture, volatile matter and carbon in the several general classes of coal. These values are for rather high grade samples of each type.

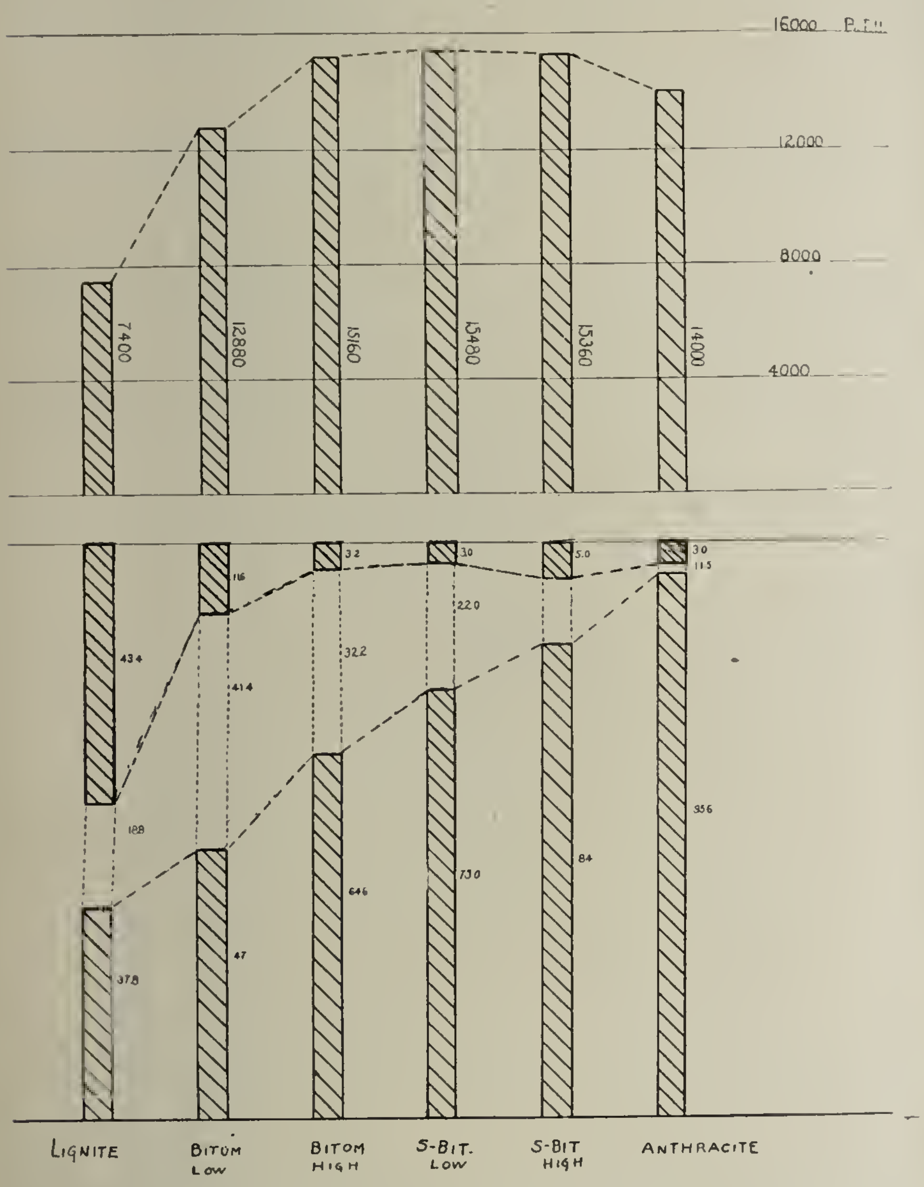
It will be seen that anthracite is practically all carbon. It has very little volatile matter and very little moisture. The semi-bituminous coals are sometimes called Pocahontas and also smokeless coal, and are used very extensively by the United States Navy and in house heating boilers. The reason for its being smokeless is due to the small amount of volatile matter.

The bituminous coals contain from 30 to 40 percent of volatile matter and somewhat more moisture than the anthracite or semi-bituminous coals. It will be noticed also that the amount of moisture in general in bituminous coal is greater as one proceeds from the Pennsylvania fields west to the Missisippi. The lignites are of no particular interest to the Wisconsin users.

The Burning of Coal.

With the preceding as background, it may be of interest to discuss the combustion of coal.

Since the semi-bituminous and bituminous coals contain a considerable portion of volatile matter, which is driven off when the temperatures of the coal are raised, it is therefore necessary to supply this volatile matter with a sufficient amount of air at the proper temperature to have complete combustion. The volatile matter must be heated to the kindling temperature and be thoroughly mixed with air if complete combustion is to take place. Soft coal should be added in small amounts and be distributed evenly. The fire should show bright on top, which results in heating the volatile matter to the burning temperature. A very large addition of coal produces too much volatile matter to combine with the air for proper combustion.



Relative Amounts of Mo'sture, Volatile Matter and Carbon in Several General Classes of Coal.

The space above the fire should be large to insure proper mixing of gases and air. Air should come in both under and over the fire. In general, the higher the amount of volatile matter in the coal the thinner should be the bed of fuel. Anthracite coal containing a small amount of volatile matter can be burned in a much thicker bed than soft coal.

The table below shows the analyses of the various coals in which Wisconsin consumers would be interested:

Source and Name.	Moisture.	Volatile.	Carbon.	Ash.	B.t.u. lbs. dry
Anthracite	2.76	2.48	82.07	12.69	12,933
Penn. bituminous	2.01	33.56	58.11	6.32	14,441
Smokeless Pocahontas...	3.89	16.20	76.46	3.45	15.162
Virginia bituminous	2.48	31.71	60.30	5.51	14,614
Ohio (Hocking Co.).....	9.72	32.44	53.41	4.43	13,567
Indiana, Terre Haute....	10.68	37.17	39.91	12.24	12,607
Illinois, LaSalle	13.87	37.26	38.56	10.31	12,755
Illinois, Saline	7.51	32.81	52.20	7.48	13,716
Illinois, Williamson	8.30	33.75	48.69	9.26	13,084
Iowa	14.08	35.59	39.37	10.96	12,479

In general, the heating values of coals from the Pittsburg region is higher than that of the coals farther west; the moisture in coal in general is greater in western than in eastern coal. Mine and dock screenings of the coals listed above will in general be poorer than the analyses given. This is due to a greater amount of ash and a greater weathering. The weathering is merely a slow burning similar to rusting of iron.

Oil.

Second to coal in importance as a fuel is oil. Oil consists of a mixture of various hydrocarbon compounds in liquid form, which can be separated by distillation, yielding valuable products.

The fuel oil available on the market may be of two kinds: (1) a crude oil; (2) a fraction or residue from crude oil, resulting from the production of gasoline, kerosene and lubricating oils. After the gasoline and kerosene are removed from the crude oil there comes a fraction which is suitable mainly as a fuel. Practically all fuel oil on the market in this section of the country has had the gasoline and kerosene removed.

There is almost as much difference in weight, color and viscosity between oils as there is between different kinds of coal. It is easier, however, to get a more uniform run of material in a shipment of oil than in coal. It will be seen from the accompanying chart that in a general way the oils from the eastern part of the country are somewhat lighter in weight than those of the Pacific coast. The Pacific coast oils are black and viscous while the eastern oils have a brownish color.

Comparison of Oil and Coal.

Source.	Sp. Gr.	Be°	Lbs. to Gal.	B. t u. to lb.	B. t. u. to gal.	Bbls. oil to 1 ton coal.
W. Va...	0.873	30	7.26	18.324	133,300	
Penn. ...	0.886	28	7.37	19,206	142,000	4.85 Bbls. (14,441 B.t.u. coal)
Calif. ...	0.965	15	8.05	18,544	149,106	4.1 Bbls. (13,000 B.t.u. coal)

It is apparent that oil has a higher heating value per pound than coal. In all cases of fuel oil the heating value should be above 18,000 B.t.u. per pound.

For the proper combustion of oil it is necessary that it be broken up into very fine particles or atomized. The temperature of the particles of oil in a large mass can not be raised so easily as in a piece of coal. To raise the oil to the kindling point where all of the constituents will unite readily with the oxygen in the air, it is necessary to have the oil very finely divided. This division of oils into fine particles is readily accomplished by blowing the oil under air or steam pressure through a small hole. For the combustion of oil it is not necessary to have so large an excess of air as for the combustion of coal, and consequently a much higher temperature can be obtained with oil firing. In general, it is easier to obtain complete combustion with oil than it is with coal.

Producer Gas.

Producer gas is made by blowing air, together with steam, through a deep bed of fuel. As the air is blown through this bed of fuel two actions take place: First, the volatile matter of the coal is driven off, due to the raising of the temperature. Second, the air supply at the bottom of the fuel bed combines with the coal, causing a rise in temperature and the formation of a combustible gas, consisting mainly of carbon-monoxide and hydrogen. The gases so formed are mixed with the volatile matter in the coal and are now available for combustion. It is theoretically possible to get in the gaseous form about 77% of the heat which was originally in the coal. It would seem that the gas producer is not an efficient device. This apparent deficiency is compensated by a better regulation of combustion and a more even distribution of temperature.

The average heating value of producer gas will be approximately 140 B.t.u. per cubic foot. The amount of gas in cubic feet made per pound of coal will vary with the type of producer and also with the type and quality of coal burned. In a general way the amount of gas will vary from approximately forty-five cubic feet to seventy-five cubic feet per pound of coal as fired.

Comparison of Different Fuels.

It will be of interest to note how much coal will be required to produce the same effect as oil, producer gas, and wood.

It has sometimes been stated that as a basis for comparison one can assume four barrels (of 42 gallons each) of oil to be equal approximately to one ton of coal. This will depend on the kind of coal and the kind of oil used in the comparison.

Assuming for the purpose of comparison a Pennsylvania oil of 0.886 or 28° Be, specific gravity, having 19,000 B.t.u. per pound or 142,000 B.t.u. per gallon, and a Pennsylvania bituminous coal giving 14,440 B.t.u. per pound. In this case it will take 4.85 barrels (42 gallons each) to get the same heat as one ton of coal; or assuming an average fuel oil with 18,500 B.t.u. per pound, 149,900 B.t.u. per gallon and an average Illinois coal with 13,000 B.t.u., it will require 4.1 barrels (of 42 gallons each) of oil to give the same heat as one ton (2,000 pounds) of coal.

The comparison of coal and wood will in general show a balance in favor of the coal. The following tabulation for oak, beech and elm will show approximately the fuel values as compared to Illinois, Pocahontas and Youghiogheny coals.

Comparison of Air Dried Wood and Commercial Coal.

	Wood.		Lbs. of coal equivalent to a cord of wood.		
	B. t. u. per lb. air dry.	Wt. lb. per cord air dry.	Illinois 12,800 B.t.u.	Pocohontas 14,500 B.tu.	Youghiogh'y 13.500 B.t u.
Oak	6,650	4,600	2,300	2,100	2,280
Birch	6,870	3,450	1,850	1,630	1,750
Elm	6,800	3,450	1,830	1,610	1,730

The following is a comparison of producer gas and coal based on data from Bureau of Mines Bulletin No. 13:

Comparison Producer Gas and Coal.

	Illinois.		Pennsylvania.	
B.t.u./cu. ft. gas.	154.8	143.7	140.6	146.4
Cu. ft. gas/lbs.coal as fired	49.8	48.0	68.8	71.5
B.t.u. in gas/lbs coal	7,710	6,900	9,680	10,480
B.t.u./lbs. coal as fired	12,046	10,854	13,518	13,775
Conversion cold and clean	64.0%	63.6%	71.7%	76.1%

This data refers to a producer operated for a gas engine. For ordinary combustion purposes the gas need not be cooled nor cleaned and therefore the efficiency of conversion would be much higher, more nearly 80%.

The Purchase of Coal on Specification.

The purchase of fuel on specification has been given considerable publicity in past years and it is not entirely clear whether such a procedure is the best for all purchasers. The question has been asked very frequently when will it pay the consumer to enter into a B.t.u. contract. The answer to that question is not easy. It has been estimated that from 2,000 to 5,000 tons per annum will justify the expense of administering a B.t.u. contract. This is, no doubt, correct if the consumer must depend on persons outside of his organization for tests on the coal. It is not necessary to test every car, and several cars can be lumped into one sample. At the University of Wisconsin, where about 25,000 tons of coal are purchased annually, samples from six cars are combined into one sample for analysis. The coal delivered is of very uniform quality, however.

The contract should specify among other things: Location of mine, size of coal, guaranteed analysis, method of sampling, method of making payments. The greatest problem is to get a correct sample for analysis, and unless this is correctly done the results are worthless. It has been the experience of those operating under a B.t.u. contract that mutual satisfaction results from a correct sampling.

It appears that the annual output of brick in Wisconsin is about 120,000,000 and that of tile is about 130,000. This would require, if coal were used for burning, about 50,000 tons; add to this 5,000 tons for operation of machinery, etc., and there will be a total of 55,000 tons of coal in the brick and tile industry.

This amount of coal, however, is distributed among about seventy-five plants, as follows:

40 plants, each less than 1,000,000 bricks, 6,000 tons of coal.
20 plants, each from one to three million bricks, 13,000 tons of coal.
10 plants, each from three to six million bricks, 11,000 tons of coal.
4 plants, each six to twelve million bricks, 10,000 tons of coal.
2 plants, each twelve to twenty-five million bricks, 10,000 tons of coal.

Therefore, it does not appear that any great number of brick plants in this state would be justified in using the B.t.u. contract.

SOUTHERN BRICK MANUFACTURERS MEET TO DISCUSS VITAL PROBLEMS.

A number of brick manufacturers from Louisiana, Arkansas, and Texas came together at Shreveport, January 16, for the purpose of discussing informally the subjects which have been of paramount importance the past year, and particularly during the winter months, including car and fuel shortage and the labor situation. No specific steps were taken and no definite policy determined upon, but the men attending the meeting felt well repaid for meeting the fellow brick manufacturers, even in an informal way. Among those present at the meeting were: R. B. Frizell of Monroe, La.; J. A. Jimerson of Ruston, La.; C. N. Adams of Alexandria, La.; A. LaGrange of Lake Charles, La.; A. J. Gwin of Winnifield, La.; S. E. Isgett of Gilbert; N. P. O'Neal of Hope, Ark.; W. H. Pugh of Marshall, La.; C. W. Martin of Dallas, Texas, and J. W. Peyton of Shreveport.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

Part XXII.

Construction of Stacks—(Continued).

THE top of the outer wall should have a suitable cap, either iron or reinforced concrete, and this should overhang inside to cover the space between the outer and inner wall and partially cover the inner wall. It is customery to put holes in the base of the outer wall for the admission of air to keep the inside face of the wall cool.

At intervals of four to six feet there should be a brick projection from the center of the inner face of the outer wall to the stack lining wall, but not bonded into the lining wall. It is better to make this projection about three courses high and to chamfer the top and bottom edges. The purpose of these projections is to stay the fire brick lining, yet at the same time not to interfere with the rise and fall of the lining as it expands and contracts under changes in temperature. Fig. No. 18 illustrates a properly constructed stack.

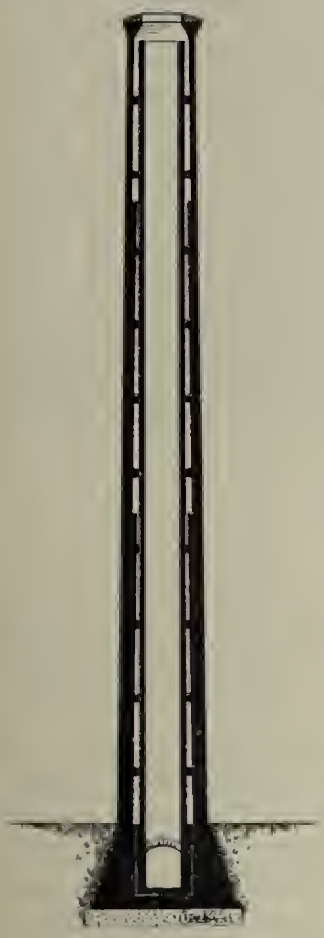


FIG. 18.

Induced Draft.

The use of fans in place of stacks is now very common. They are used almost exclusively in continuous kiln operations, and are beginning to replace periodic kiln stacks. The advantages of fan draft are:

1. Less first cost.
2. Flexibility, in that by speeding up the fan, we increase the intensity of the draft and the volume of gases handled.
3. Independence of atmospheric conditions.

In continuous kiln operations it is imperative that the stacks be replaced by fans in order to increase the rate of burning.

There is a limit to the height of a stack, if for no other reason than the cooling of the gases to a temperature at which the weight of a cubic foot of gas is equal to or greater than the weight of a cubic foot of outside air. To make a higher stack effective it would be necessary to take the gases from the kiln at a higher temperature, which would involve a loss of heat.

The need is not so imperative in periodic kilns because of the high stack temperatures, but in such kilns, in view of the fact that we need greater intensity than a stack will give during the earlier stages of the burning, the use of a fan has decided advantages over a stack. The loss in heat in a periodic kiln stack is a large percentage of the total fuel, and this loss is unavoidable in a stack, since the heat is required to create the draft. With fan draft we may make use of this heat, and extended use of fans for periodic kilns will lead to the development of uses for the waste heat in the gases.

Dryers have been built in which the combustion gases from the kilns are taken through flues in the dryer and the heat applied to drying the ware. Here is one direct use of the waste heat, which with fan draft is readily adaptable, but which is not applicable to stack draft because of the increased resistance introduced by the dryer flues and the decreased stack intensity in consequence of the lower temperature stack gases. Such an application of waste heat to radiated heat dryers is but a step in advance of the present direct firing.

The collection of the waste heat in the combustion gases in one or two kiln installations has been accomplished by an economizer, and this idea is worthy of further development.

It would be practical to use the heat thus collected for primary or secondary air in the kiln furnaces.

Some designs have been worked out to generate steam for power with the waste gases under the kiln floor, which would not be satisfactory because of the cooling effect on the floor, but there can be no objection to using the heat for such purpose after it has left the kiln, and fan draft would make this possible.

We have three problems for the future when induced draft on periodic kilns becomes the rule rather than the exception.

The selection of the fan for induced draft requires study and thought. We must first determine the volume of gas to be moved, provide for maximum conditions, and make some allowance for leakage.

The theory of fan performance is a little puzzling to a layman, and each problem should be put up to the manufacturer of fans, but unfortunately we cannot give them satisfactory data. All tables of fan performances presented in fan catalogues are for ventilation and are only measurably applicable to clayworking conditions.

A brief discussion of fan operation will not be out of place. Mergue, Rateau and others discuss the problem from the standpoint of effective area or equivalent orifice.

In Fig. 19, the large square represents the outlet of a fan. The shaded area, which is 40 to 50 per cent. of the total area, is the effective area, or, in other words, it is the area of opening within which we can maintain a constant static pressure without changing the speed of the fan. If we assume a desired static pressure of one inch of water for any operation, we cannot get this with a fully opened outlet. If we close the outlet entirely, the fan will develop a pressure of one inch within the closed space. When this pressure is attained the backward pressure through the fan just balances the forward pressure by the fan. If we open the outlet, increasingly up to an outlet equal to the shaded area, the pressure within the space will remain practically constant, and the effect is an increase in volume of air. If we are designing an equipment with several distributed outlets as a dryer, for instance, the outlets should have an equivalent area equal to about 40 per cent. of the fan outlet, and thus we will get approximately the volumes listed and the pressure throughout the main distributing duct will approximate the estimated pressure.

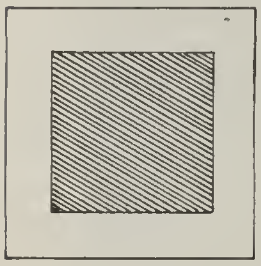


Fig. 19.

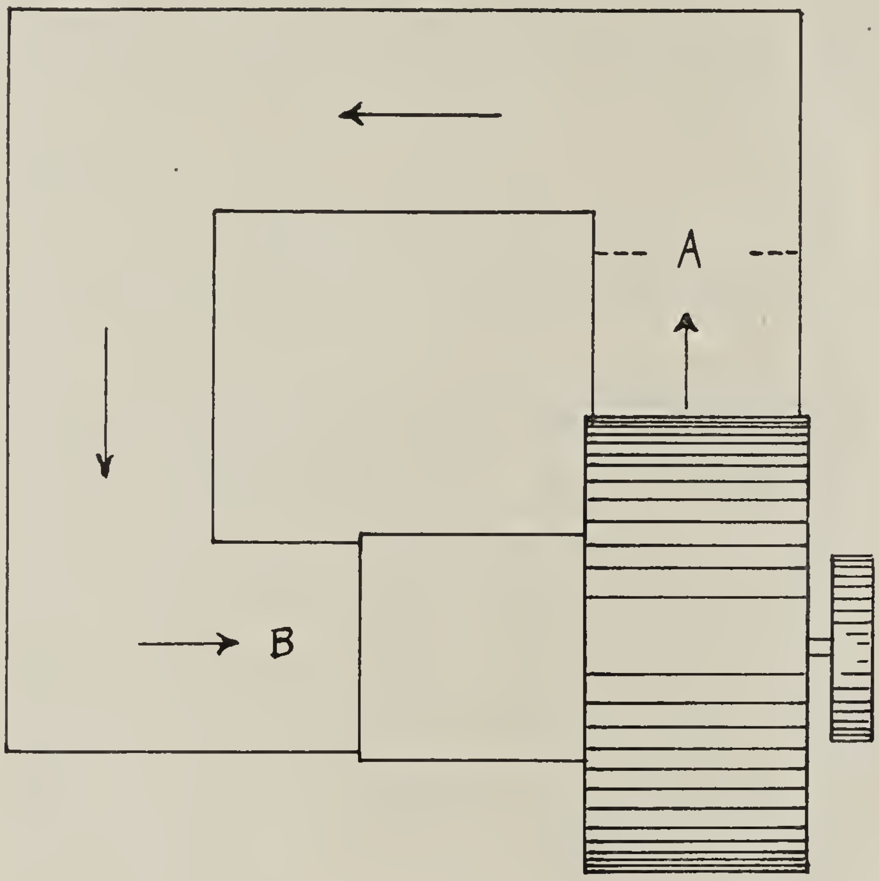


Fig. 20.

If we have a fan connected with itself by an encircling duct, as shown in Fig. 20, there will be no static pressure in the duct if it is equal to the fan outlet throughout the circuit, friction not considered. If we introduce a diaphragm as at "A," this when completely closed enables the fan to develop its maximum pressure, say, one inch, between the diaphragm and the fan and this static pressure relatively will be maintained up to a 40 per cent. diaphragm opening, above which the pressure falls off rapidly to zero at the full opening. If we move the diaphragm to "B," there is no change in principle, except we say that the fan is overcoming a resistance of one inch instead of developing a like pressure. Suppose now we remove the air from the duct, there being nothing to move, no pressure can be developed. If we introduce a little gas we can develop a slight pressure, increasing with the density of the gas until at atmospheric conditions we again develop the maximum pressure.

The point of this is that the pressure given in catalogue data is based on atmospheric conditions, and if we wish to handle a hot, rarified gas, we must select an equipment with a higher listed pressure in order to overcome the equivalent resistance. It is simply a question of force equals mass times velocity. If we increase or decrease the mass we increase or decrease the force which we measure as pressure.

Effective areas assume that the pressure is constant up to 40 per cent. opening, but this is not strictly true.

The per cent. pressure curve for a steel plate fan may be represented by the solid line curve shown in Fig. 21. With no outlet we get the initial pressure, which increases slightly with an opening approaching 20 per cent. Then follows a pressure with slight change up to 50 per cent. opening, beyond which there is a rapid decline in pressure. The effective area is this range of slight change, and we preferably take the upper limit in order to get a maximum volume.

The dotted curve illustrates the behavior of a multi-vane fan. First a slight drop, then a rise, followed by the effective area between 30 and 60 per cent. opening.

In working out a problem for a pressure system, we select a fan with the required volume and pressure capacity and proportion the delivery outlets to suit the fan. We cannot do this for induced draft, which would mean constructing the kiln and setting the ware to correspond with the fan.

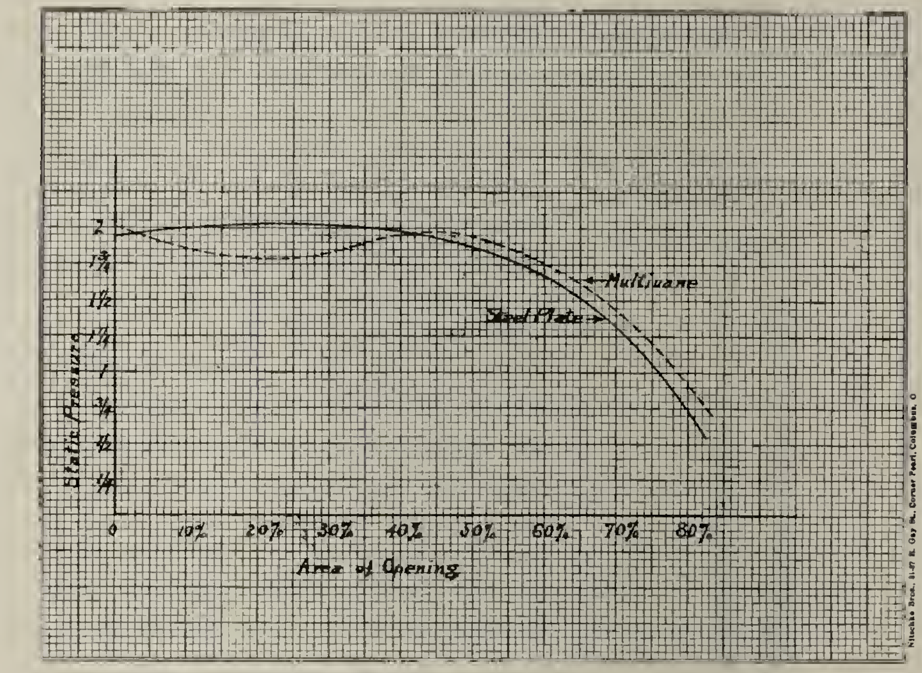


Fig. 21.

We must determine the kiln resistance, the volume, density and temperature of the gas. In pressure estimates we figure on 40 per cent. effective area, but since we do not know what the area is in induced work, we should err on the safe side and base our estimates on an area not exceeding 30 per cent. The determined resistance must be increased to correspond with the decrease in gas density compared with air, then select from the fan tables the fan which will deliver the the volume of gas, temperature considered, and which will develop a static pressure equal to the resistance. This pressure is a matter of speed, and the selection should be an average speed which gives the desired flexibility for a fan equipment. In our periodic kiln stack problem we assumed a kiln resistance of .4 inch of water. Let us say that the kiln resistance, including flue to fans, turns in flue, etc., totals .5 inch resistance and that the gases reach the fan with a temperature of 832 degrees. We estimated on the basis of .181 pounds of coal per second, which in round numbers would be 11 pounds per minute developing about 1970 cu. ft. of gas. This increases to 5122 cu. ft., or allowing for leakage, assume 6000 cu. ft., at 832 degrees, and the density becomes .38. The resistance then should be estimated 1.32 inches water pressure. The fan (steel plate) should have a 4½-foot wheel speed 350 r.p.m, or a 5-foot wheel speeded 300 r.p.m.

If we should figure on four kilns, the fan should have a 9-foot wheel with a speed of 190 r.p.m.

This gives an excellent starting point in the selection of the fan, and the results from available data and carefully considered assumptions will apply to our clayworking operations.

In the selection of a single fan for the double operation involved in continuous kiln operation, we must make wide allowance for imperfect operation. We can determine within a reasonable approximation the volume of gases from the burning operation, and, given the temperature, we can determine the air volume for the water-smoking, but we cannot determine the uncertain control of the latter. No harm results if we use ten times the required volume in the water-smoking except the decrease in the profits through excessive waste of heat.

It can be shown that it requires nearly, perhaps twice, as much air for the water-smoking as that required for the burning.

Assume 30,000 bricks containing 3 per cent. moisture and 2 per cent. hygroscopic water heated up to an average temperature of 432 degrees by air entering at 632 degrees and leaving at 332 degrees.

180,000 pounds brickwork × .2 × 185	6,660,000 B.t.u.
171,000 pounds dry clayware × .2 × 370	12,654,000 B.t.u.
5,400 pounds water × 150	810,000 B.t.u.
5,400 pounds water to vapor × 970	5,238,000 B.t.u.
5,400 pounds water vapor × .48 × 220	570,240 B.t.u.
3,600 pounds water (hygroscopic) × 370	1,332,000 B.t.u.
3,600 pounds water × (966 — .7 × 200)	2,973,600 B.t.u.
	29,577,840 B.t.u.
Less 3,600 × .49 × 100	176,400 B.t.u.
Total heat requirement	29,401,440 B.t.u.

If the air enters the kiln 80 per cent. saturated, the thermal value from each pound will be 72.5 B.t.u., and to give the above heat requirement we must have 405,537 pounds of air per day, or 4.7 pounds per second, or 58 cubic feet per second. The moisture from the ware adds 2 cubic feet, making 60 cubic feet per second. We found the air for combustion to be 33 cubic feet per second, and to this 2 cubic feet of combined water vapor must be added, making 35 cubic feet.

In one instance where the theoretical combined volume of gases did not exceed 18,000 cubic feet per minute, the actual volume coming through the fan exceeded 50,000 cubic feet, showing a big loss in heat and power.

In the problem of stack height, we found a required pressure of 1.245 inches of water. If the gases entering the fan have a temperature of 432 degrees, the density will be approximately 0.56 inch. We have 35 cubic feet of gas per second from the combustion compartments and 60 cubic feet from the water-smoking, making a total of 95 cubic feet of gas per second, or 5,700 cubic feet per minute. At 432 degrees this becomes 9,920 cubic feet. We must select a fan speed which will give a static pressure of $\frac{1.245}{.56} = 2.4$ inches, and the volume will be 9,920 cubic feet plus allowance for leakage and bad control.

Theoretically, this would require a steel plate fan with a 6-foot wheel, running at something over 400 r.p.m. If we allow three times the estimated volume for leakage and bad control, which was the fact in the test cited, the operation will require a fan with a 9-foot wheel, running about 250 r.p.m.

(To be continued.)

HOW TO REPORT NET INCOME UNDER WAR REVENUE ACT.

MANY THOUSANDS of business men, whose incomes or profits were not taxable under the previous income tax laws, will this year be required to file reports of their incomes or profits, which will be subject to tax according to the provisions of the War Revenue Act of 1917. These reports must be filed on or before April 1, 1918.

It is the purpose to give in this article a number of concrete examples of the manner in which the business man's income or profits will be affected, and also to interpret the law in such a manner that he will be enabled to make a correct return of his earnings for the year.

The liability for taxes on incomes and excess profits is covered by Titles I and II of the War Revenue Act, and the provisions contained under these titles are applicable to corporations, partnerships and individuals.

In this connection the tax liability of corporations will be treated first. There are three separate taxes imposed on corporations, which are as follows:

1. Tax on Net Income.
2. Tax on Excess Profits.
3. Tax on Undistributed Earnings.

Tax on Net Income.

Under the law of 1916 a tax of 2 per cent. was imposed on the net income of corporations, and this provision still remains in force. However, the law of 1917 imposes an additional tax of 4 per cent. on the net income, as provided in Section 4. Thus the income tax for 1917 must be computed at 6 per cent. In 1916 a net income of $50,000 was subject to a tax of $1,000, while in 1917 the same amount of net income would be subject to a tax of $3,000.

Tax on Excess Profits.

The tax on excess profits is the one from which the government will derive the greater portion of revenue. Many industries have been greatly benefited financially as a result of the conditions brought about by the war. The excess profits tax is to be levied on the principle that the industries which have been benefited through war conditions should therefore contribute a proportion of their increased profits to the government. However, the law as finally passed does not exempt a corporation or other form of business organization from paying the excess profits tax, whether they have or have not received any benefits from the war conditions. If a corporation had an annual net income of $100,000 during the pre-war period, and its annual net income for 1917 does not exceed this amount, it will still be required to pay the tax on excess profits.

The excess profits tax covers all earnings since January 1, 1917; so that the first taxable year ends December 31, 1917, and for which period corporations must file their returns. However, if a corporation has fixed its own fiscal year, then the taxable year for such a corporation is the fiscal year ending during the calendar year of 1917. The amount of tax payable will then be computed on the earnings of the corporation from January 1, 1917, to the end of such fiscal year.

There are a number of methods by which the excess profits tax may be ascertained, but the first method mentioned in Section 203 is the one which will be used by those corporations whose invested capital and annual net income are definitely known. This method is explained in the following paragraphs, and a complete schedule with figures is given for ready reference.

Assuming a corporation with an invested capital of $100,000 having an annual net income of $50,000 for the year 1917. With these figures stated we may compute the tax in the following manner:

Schedule A.

1.	Net income		$50,000
2.	Deducting 9% of capital, the maximum deduction	$9,000	
3.	Plus additional deduction of	3,000	12,000
4.	Taxable net income		$38,000
5.	Tax on amount of net income in excess of deduction and not over 15% of capital—$3,000 at 20%		$ 600
6.	Tax on amount of net income in excess of 15% of capital and not over 20%—$5,000 at 25%		1,250
7.	Tax on amount of net income in excess of 20% of capital and not over 25%—$5,000 at 35%		1,750
8.	Tax on amount of net income in excess of 25% of capital and not over 33%—$8,000 at 45%		3,600
9.	Tax on amount of net income in excess of 33% of capital—$17,000 at 60%		10,200
	Total excess profits tax		$17,400
	Net income	$50,000	
	Less excess profits tax	17,400	
	Net income subject to 6% income tax	$32,600	1,956
	Total taxes		$19,356

Items 2 and 3 in the above schedule show that a deduction of $12,000 was made from the net income, thereby reducing the taxable net income for excess profits tax to $38,000. This deduction is allowed according to Section 203 of the War Revenue Act, which is as follows:

"That for the purpose of this title the deduction shall be as follows: (a) in the case of a domestic corporation the sum of (1) an amount equal to the same percentage of the invested capital for the taxable year which the average amount of the annual net income during the pre-war period was of the invested capital for the pre-war period (but not less than 7 or more than 9 per centum of the invested capital for the taxable year) and (2) $3,000."

This means in effect that if a corporation earned 9 per cent. upon its invested capital during the three years previous to the war, then it will be allowed to deduct 9 per cent. of the amount of invested capital from the net income for 1917 before computing the excess profits tax, plus an additional specific deduction of $3,000, which is allowed in all cases.

Where the invested capital is large and the net income is small in proportion, the taxes will also be less. Thus a corporation with a capital investment of $500,000, whose annual net income is only $50,000, would be allowed the deductions as shown below:

Net income	$50,000		
Deducting 9% of capital, the maximum deduction	$45,000		
Plus additional deduction of	3,000	48,000	
Net income subject to 20% excess profits tax		$ 2,000	$ 400
Net income		$50,000	
Less amount of the excess profits tax		400	
Net income subject to 6% income tax		$49,600	2,976
Total taxes			$3,376

Items 5, 6, 7, 8 and 9 in Schedule A are covered by Section 201 of the War Revenue Act, which requires that the excess profits tax be computed on the following basis:

5. "Twenty per centum of the amount of the net income in excess of the deduction and not in excess of 15 per centum of the invested capital for the taxable year;

15% of the invested capital	$15,000	
Less deduction allowed	12,000	
		tax
Income subject to 20% excess profits tax	$ 3,000	$ 600

6. "Twenty-five per centum of the amount of net income in excess of 15 per centum and not in excess of 20 per centum of such capital;

20% of the invested capital	$20,000	
Less 15% of the invested capital	15,000	
		tax
Amounts subject to 25% excess profits tax	$ 5,000	$1,250

7. "Thirty-five per centum of the amount of net income in excess of 20 per centum and not in excess of 25 per centum of such capital;

25% of the invested capital	$25,000	
Less 20% of the invested capital	20,000	
		tax
Amount subject to 35% excess profits tax	$ 5,000	$1,750

8. "Forty-five per centum of the amount of net income in excess of 25 per centum and not in excess of 33 per centum of such capital;

33% of the invested capital	$33,000	
Less 25% of the invested capital	25,000	
		tax
Amount subject to 45% excess profits tax	$ 8,000	$3,600

9. "Sixty per centum of the amount of net income in excess of 33 per centum of such capital."

Total net income	$50,000	
Less 33% of the invested capital	33,000	
		tax
Amount subject to 60% excess profits tax	$17,000	$10,200

The total amount of excess profits tax as shown by Schedule A is $17,400. This amount may then be deducted from the net income before the income tax of 6 per cent. is computed. This leaves a net income of $32,600 on which the 6 per cent. tax is computed, making a total income tax of $1,956. Adding together the excess profits tax and the income tax, the total taxes amount to $19,356.

Tax on Undistributed Earnings.

Section 1206 (b) contains the provisions that "there shall be levied, assessed, collected, and paid annually an additional tax of 10 per centum upon the amount of net income remaining undistributed six months after the end of each calendar or fiscal year, of the total net income of every corporation, joint-stock company or association, received during the year, but not including the amount of any income taxes paid by it within the year imposed by the authority of the United States."

This provision was no doubt inserted to discourage corporations from retaining in their hands large amounts of undivided profits which are not required in the direct operation of the business. This provision will tend to encourage the distribution of profits in the form of dividends to stockholders, at least during the period of the war.

But it is further provided that "the tax imposed by this sub-division shall not apply to that portion of such undistributed net income which is actually invested and employed in the business or is retained for employment in the reasonable requirements of the business or is invested in obligations of the United States issued after September 1, 1917."

It is easily apparent that if a corporation invests its undivided profits in United States government bonds issued after September 1, 1917, that the amounts of undistributed profits so invested will be free of tax, while if the amounts are invested in other classes of securities, then the tax will apply.

There is also a provision that if a corporation retains undistributed profits for employment in the business, and does not so employ these profits, then they shall be subject to a tax of 15 per cent. This provision is in the form of a penalty for attempted evasion of the 10 per cent tax.

All corporations will have ample time for the proper distribution of their earnings, as the law allows six months' time from the close of the year for this purpose.

Computing Taxes for Partnerships.

Under the previous income tax laws partnerships as such were not liable for income taxes, but the partners were required to pay income tax on their individual incomes, which of course included the share of profits derived from the partnership. The War Revenue Act does not change this provision, and partnerships as such are not liable for income tax upon their net income. The partners must pay income tax if their share of the profits is in excess of the deduction allowed by law for individuals.

Partnerships are, however, liable for the excess profits tax. A partnership can make its returns for the fiscal year or calendar year, having the same privileges accorded to corporations. Every partnership having a net income in excess of $6,000 per annum must file a correct return of its business for the taxable year; and all partnerships must, when so requested, render a correct return of the partnership business, whether the net income is or is not in excess of $6,000 per annum.

The excess profits tax applys to a partnership in the same manner as explained for corporations, and is ascertained in the same manner as shown in Schedule A, with the one exception that corporations are entitled to add only $3,000 to the deduction, while partnerships are allowed to add $6,000.

Individual Engaged in Business.

Assuming an individual to be engaged in business with an invested capital of $100,000, and an annual net income of $50,000.

The excess profits tax would be computed in the same manner as shown in Schedule A, with the single exception that the additional specific deduction would be $6,000 instead of $3,000 as shown. In this instance the tax on excess profits would be $16,800. The income tax will then be ascertained as shown below.

Net income of individual	$50,000
Deduct the excess profits tax	16,800
Income subject to income tax	$33,200

Income Tax on $33,200.

$29,200	at 2%	$ 584.00
31,200	at 2%	624.00
2,500	at 1%	25.00
2,500	at 2%	50.00
2,500	at 3%	75.00
2,500	at 4%	100.00
5,000	at 5%	250.00
13,200	at 8%	1,056.00
Total income tax		$ 2,764.00
Excess profits tax		16,800.00
Total taxes		$19,564.00

The law of 1916 imposes a tax of 2 per cent. on the individual's income, with a deduction of $4,000 allowed to the head of a family, which leaves $29,200, the first taxable item. The law of of 1917 imposes an additional tax of 2 per cent., with a deduction of $2,000 allowed, which leaves $31,200, the second item. The six remaining items are computed according to the super tax of 1917, which affects incomes over $5,000 per annum. The super tax is graded as follows:

Tax of 1%	on income over	$ 5,000	up to $ 7,500
Tax of 2%	on income over	7,500	up to 10,000
Tax of 3%	on income over	10,000	up to 12,500
Tax of 4%	on income over	12,500	up to 15,000
Tax of 5%	on income over	15,000	up to 20,000
Tax of 8%	on income over	20,000	up to 40,000

(For larger incomes see War Revenue Act.)

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Written for The Clay-Worker.

BRICK NEWS FROM SOUTHERN INDIANA.

AS HAS BEEN the case in other sections, trade with the brick and tile manufacturers of cities and towns in southern Indiana has been dull during the past month or six weeks and inclement weather conditions have operated to a great extent against the business and lack of railroad facilities has also had its effect. It is not believed now there will be much improvement in trade until early spring, when the building season will open. The general opinion of the manufacturers is that while there will be some building done in southern Indiana, southern Illinois and western Kentucky during the coming season, that it will fall below that of last year and the year before. According to John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, winter is generally a dull season and he has not expected much business to roll in during the past month or so. Two of the plants of the Standard Brick Manufacturing Co. have been closed down for some time past and one plant has been running on short time. With the coming of spring and the resumption of building it is expected that all the plants will be operated on full time again. Mr. Andres says that his company has not felt the effect of the car shortage for the past several weeks and that in fact they have gotten all the cars from time to time necessary to ship out their products. Several of the large manufacturing plants in Evansville are planning additions for the coming season and this means that local brick manufacturers will get the work. The Schmadel Packing Co. will build an addition and make improvements that will total $30,000 or more. The Evansville Suburban and Newburg Traction Co. will build several car barns and sheds in Evansville and some of this work will require a great many brick. Mr. Andres says that he expects to see things open up in a short time, say about the first of March, and that he does not look for business to boom at any time during the season, yet he thinks the manufacturers will keep busy. The labor shortage problem is expected to be felt later on by the brick and tile manufacturers of southern Indiana as more of the men of draft age are called to the colors. Brick manufacturers report that the fuel problem has been a most serious one during the past two months and coal deliveries have been irregular and the prices have been the highest southern Indiana ever saw.

Among the brick manufacturers from southern Indiana who attended the thirty-second annual convention of the National Brick Manufacturers' Association at Indianapolis were Henry C. Kleymeyer and John Andres of the Brick Manufacturing Co. of Evansville; Charles Hermann of the United States Brick Co. of Tell City, Gilbert Landgrebe of the Huntingburg Pressed Brick Co. of Huntinghurg, S. C. Klutey of Kleymeyer & Klutey of Henderson, Ky., and Leo J. Brenner of the Cannelton Clay Products Co. of Evansville.

At a meeting of the stockholders of the Cannelton Clay

Products Co., at Cannelton, Ind., held recently, the capital stock of the company was increased $8,500, and $5,000 of this amount was taken at once by the stockholders who attended the meeting. Other stockholders spoke for the remaining $3,500 and the stock was absorbed in a short time, thus showing what the stockholders think of the investment. This concern is one of the newest industries in Cannelton and it has been a most successful one. The product of the company is a fire brick of superior quality and the company reports that the demand for this brick is constantly increasing and that business is very good. The plant is being operated at full capacity and, in fact, has been for some time past. Leo. J. Brenner is the general manager of the company. All of the old officers and directors were re-elected for the ensuing year.

Gil C. Landgrebe, general manager of the Huntingburg Pressed Brick Co. at Huntingburg, Ind., was confined to his home recently with a severe attack of the grip, but he has recovered and is now on the job again.

Ira C. Caswell, president of the Industrial Brick Works at Boonville, Ind., took in the special course of instruction in the manufacture and burning of brick at the Illinois State University at Urbana.

The Loogootee Brick and Tile Co., of Loogootee, Ind., has retired $10,000 of preferred stock and has increased its common stock from $40,000 to $50,000.

At a meeting a few days ago of the directors of the Huntingburg Pressed Brick Co. at Huntingburg, Ind., M. M. McNellis was re-elected president, H. C. Rothert was made treasurer and Gil C. Landgrebe was re-elected secretary and general manager. The past year was a most prosperous one for the company, and it is expecting to do a nice volume of trade during the present year.

"As the German exports have been cut off, the demand for decorated table and toilet ware is good," said Arthur Davidson, of the Crown Pottery Co. of Evansville, a few days ago. "Costs, of course, have increased, and while there are shipping difficulties, we have grown so accustomed to them that we regard them as normal. Evansville has excellent shipping facilities, especially south, where we do a great deal of business in the course of a year, and if one railroad can not supply cars, we are usually able to obtain them from another. Prices have naturally advanced correspondingly with costs. We still have to meet the English competition, as their output of pottery appears to be almost as great as before the war, while the Japanese manufacture in their branch has increased three-fold. We look for a good business this year and see no reason why it should not show an increase over some of the years gone by."

At a special meeting of the county commissioners of Jennings county, held at North Vernon, Ind., a few days ago in the interest of Jennings county's part in the proposed east and west market highway, the board made an appropriation of $60,000 and also made application for a like amount from the state. The proposed route through Jennings county covers twenty-four miles and it is hoped to have some of this highway constructed of brick. The appropriation made by the commissioners, with that to be received from the State, is said to be sufficient to build six miles of the road. The board will make additional appropriations for the road at a later date, it is announced. Southern Indiana is just waking up to the importance of good roads and the agitation is going forward in all sections of southern Indiana. Brick manufacturers are among the main boosters for good roads.

A HOOSIER.

We used to talk about "blue Monday," but now we have experienced "cold" Monday.

WAR CONFERENCE TAKES PLACE OF USUAL IOWA CONVENTION

THE annual meeting of the Iowa Clay Products Manufacturers' Association was held at Des Moines, Ia., Hotel Chamberlain, Jan. 23 and 24. Instead of the usual program consisting of papers and discussions, the Hawkeye clayworkers were given an innovation in the form of a war conference. There were no set papers, the following subjects were suggested and everyone joined in so that every angle of every question was brought out and thoroughly explained.

1. Car shortage and distribution, (a) putting the case before proper officials, and (b) confining shipments to short hauls.

2. Labor shortage: (a) Exemptions, (b) attitude toward "shifters," (c) employment of boys and old men, (d) wage system, (e) labor-saving devices, (f) shall an attempt be made to maintain capacity production?

3. Fuel shortage: (a) Securing fair prices and an adequate supply by concerted action, (b) producer gas, (c) methods and devices for conserving fuel in burning, drying and power production.

4. Making the manufacture of drain tile an "essential industry" during the war: (a) Reasons, (b) proper action.

5. Income tax problems: (a) The meaning of the various provisions, (b) method of determining tax you owe, (c) possible action to correct injustices to clay products manufacturers.

6. Shall we get a fair profit? (a) necessity for knowing costs, (b) methods of obtaining costs, (c) co-operative advertising and (d) the "open-price" system.

In opening the conference, President Hamilton of the Des Moines Chamber of Commerce was introduced and made the welcoming address, which was responded to by W. J. Goodwin of the Goodwin Tile and Brick Co., who made a patriotic speech in which he stated it was his belief that every clay product manufacturer in Iowa would completely shut down his plant if it was urgent to do so.

In opening the subject, "Car Shortage and Distribution," Mr. W. G. Galvin of Rockford mentioned the fact that he had written letters to dealers requesting co-operation in shipments and had gained favor from the car commission in so doing through indirect communication. The discussion which followed on the subject emphasized the fact that in nearly every instance where full car orders were not secured at first, a full capacity shipment was made when the case was presented in the proper way to the purchaser.

Mr. S. G. Elton of the Richland Tile Co. opened the discussion of Labor Shortage and pointed out that, though a great crop production was absolutely necessary, there was much less available labor for the farmer than heretofore. The practical way to increase production, he stated, was for the farmer to raise maximum crops, working every acre to its full capacity, which could only be done by tile under drainage.

A suggestion was made that the government be asked to make a ruling eliminating certain sizes of drain tile generally not frequently called for, but those present considered that this proposition was hardly practical and nothing definite was done with the matter.

The subject of Fuel Shortages was opened by Charles Webster, fuel administrator of Iowa. He stated there was a possibiilty of a zone restriction ruling under which only short hauls would be allowed, so that every consumer would have to purchase his coal from the nearest point, regardless of contract, kind of fuel desired, etc. He urged all the manufacturers to stock up with fuel during the next few months and not wait for the price to get lower, which fact he did not think would happen. The same fuel shortage, he believes, will be experienced next winter.

Mr. W. F. Worcester of Milwaukee, Wis., made a talk on "Appraisals and Insurance," followed by a lively discussion lead by C. B. Stiver of the United States Treasury Department on the income tax problems.

Every difficulty in this connection was explained and the delegates seemed somewhat relieved in cutting their eye teeth in this particular.

Mr. E. J. Anderle of the International Clay Machinery Co., Dayton, O., made a very interesting talk on "Drying Clay Ware by a Producer Gas Fired Drier." He stated this type of drier was the best and cheapest kind in which to dry clay ware. In the discussion which followed it was discovered that very few present knew the actual cost of the drying of their products or the expense necesary to operate the fans in their waste heat driers.

The following officers were elected for the ensuing year: Harry S. Vincent of Fort Dodge, president; G. H. Galvin of Rockford, vice-president; H. R. Straight of Adel, treasurer, and Homer F. Staley of Ames, secretary.

A resolution was passed in which the manufacturers protested against the proposed zone restriction of fuel shipments. The secretary was instructed to send a copy of same to the prominent higher authorities at Washington.

The following registered during the meeting:

W. W. Mitchell, Carlisle Brick and Tile Co., Carlisle, Ia.
W. F. Worcester, Ran Appraisal Co., Milwaukee, Wis.
C. W. Irwin, Hydraulic-Press Brick Co., Minneapolis, Minn.
Chas. Webster, Fuel Administrator of Iowa, Des Moines, Ia.
Frank E. Webner, F. E. Webner Co., Chicago, Ill.
C. A. Baker, Baker Brick Co., Des Moines, Ia.
C. R. Lyon, Dallas County Clay Co., Woodward, Ia.
E. G. Nelson, W. C. Clay Products Co., What Cheer, Ia.
S. J. Gavin, Auburn Brick and Tile Co., Auburn, Ia.
L. Haigh, American Clay Machinery Co., Bucyrus, Ohio.
F. C. Lafountain, Reliance Brick Co., Kansas City, Mo.
Roy G. Smith, Bonnot Co., Kansas City, Mo.
Geo. E. Aulmann, Eagle Iron Works, Des Moines, Ia.
H. L. Tramp, Tramp Bros., Creston, Ia.
E. M. Cook, Mason City, Ia.
J. L. Johnson, Plymouth Clay Products Co., Fort Dodge, Ia.
C. W. Long, Washington, Ia.
J. F. Yegg, Boone Clay Works, Boone, Ia.
E. P. Bradshaw, E. P. Bradshaw & Co., Fort Dodge, Ia.
C. J. Newly, Lynnville, Ia.
G. S. Brubaker, H. Brewer & Co., Peru, Ind.
C. C. Long, Columbus Junction, Ia.
H. R. Chamberlain, Dallas County Clay Co., Woodward, Ia.
C. C. Carhart, Sheffield Brick and Tile Co., Sheffield, Ia.
John Gethmann, Gethmann Brick Co., Reinbeck, Ia.
J. A. Dailey, Shale Brick and Tile Co., Chillicothe, Mo.
L. E. Stone, Shackelford Brick Co., Des Moines, Ia.
F. L. Steinhoff, Chicago, Ill.
J. A. Wilson, Livermore Brick and Tile Co., Livermore, Ia.
Jno. F. Slater, Des Moines, Ia.
G. H. Galvin, Rockford Brick and Tile Co., Rockford, Ia.
Geo. Kornegor, Rockford Brick and Tile Co., Rockford, Ia.
J. M. Powell, Indiana Drain Tile Co., Brooklyn, Ind.
C. C. McCormick, Des Moines Clay Co., Des Moines, Ia.
B. F. King, Colchester Brick and Tile Co., Colchester, Ill.
W. S. Schutts, North Iowa Brick and Tile Co., Mason City, Ia.
C. R. Madison, Algona Brick and Tile Works, Algona, Ia.
H. R. Straight, Adel Clay Products Co., Adel, Ia.
Newton E. Haines, Main Belting Co., Chicago, Ill.
S. E. Cullom, International Clay Machinery Co., Dayton, Ohio.
E. J. Anderle, International Clay Machinery Co., Dayton, Ohio.
H. L. Burton, Globe Machinery and Supply Co., Des Moines, Ia.
B. E. Sewell, General Western Material Co., Waterloo, Ia.
E. Emmert, Shackelford Brick Co., Des Moines, Ia.
C. A. Rawson, D. M. Brick and Tile Co., Des Moines, Ia.
J. S. Reeves, Iowa Pipe and Tile Co., Des Moines, Ia.
W. G. McMillan, Keota Brick and Tile Co., Keota, Ia.
J. H. Abel, Ft. Dodge Brick and Tile Co., Ft. Dodge, Ia.
C. J. Weston, Weston Dump Car Co., Ft. Dodge, Ia.
J. W. Lazear, Brown Instrument Co., Chicago, Ill.
H. F. Staley, Iowa State College, Ames, Ia.
C. B. Platt, Permanent Buildings Society, Des Moines, Ia.
J. A. Glandon, A. P. Green Fire Brick Co., Mexico, Mo.
R. M. Burtis, Postville Clay Products Co., Postville, Ia.
O. N. Hildebrant, G. Brick and Tile Works, Garrison, Ia.
J. L. Platt, Platt Co., Van Meter, Ia.
W. J. Wetzstein, Davenport Brick and Tile Co., Davenport, Ia.
Geo. E. Winter, National Clay Works, Mason City, Ia.
S. G. Elton, Richland Tile Co., Richland, Ia.
W. J. Goodwin, Goodwin Tile and Brick Co., Des Moines, Ia.
F. J. Kock, Crystal Springs C. P. Mfg. Co., Kimballton, Ia.
A. C. Westendorf, Davenport Brick and Tile Co., Buffalo, Ia.
E. Berger, Davenport Brick and Tile Co., Davenport, Ia.
W. H. Brecht, Boone Tile, Brick and Paving Co., Boone, Ia.
S. A. Martin, Centerville Brick Co., Centerville, Ia.
H. C. Pearson, Maxwell Clay Products Co. Maxwell, Ia.
Ned Pearson, Maxwell Clay Products Co., Maxwell, Ia.
P. W. Hean, National Sewer Pipe Co., Webster City, Ia.
J. T. Buckley, Capital Clay Co., Des Moines, Ia.
W. T. Goodwin, Kalona Clay Co., Kalona, Ia.

BRICKMAKING AS IS.

One of the noticeable things about the N. B. M. A. annual program was more than the usual number of talks on brick making, as it is done in different parts of the country. This is good and also it is a reminder of points of distinction between brickmaking theories and brickmaking practices. Obviously we need both, that is theories, idealism and description and understanding of every day brickmaking as it is done by different people in different parts of the country. Moreover, we often find among the plants as they are many ideas and wrinkles which are of decided advantage to others, ideas that are developed because of peculiarities of local conditions or from some cause or other aside from what might be termed abstract theories. To study brickmaking as it is done without theorizing or speculating upon how it might be done would not be conducive to rapid progress, but to study brickmaking as it is done in connection with new theories and ideas developed through research work is the best way to get that wholesome balance between theory and practice which makes for good progress on the one side and good practical business on the other. We have been inclined to more free indulgence in discussion of theories and research than in describing and talking about brickmaking as it is done. So it is a good thing, well worth while, to have a somewhat larger share of attention given to brickmaking as it is, including all kinds of brick plants from the simplest soft mud sand molding to the latest offering in up-to-date modernization.

A RECORD YEAR IN CEMENT.

Cement has developed a habit of breaking records annually. A preliminary estimate by the U. S. Geological Survey of the annual production of cement, in 1917, shows a grand total of 93,554,000 barrels. This is a million and a half more than the greatest annual production and more than two million above the production of 1916. The shipments fell slightly below the production which served to increase stocks at the mills somewhat. Higher prices prevailed for cement throughout the country except for a few plants in the Pacific coast district. These, however, were accompanied by higher cost of manufacture consequently the profit account of cement manufacturers was not swelled in proportion to the increase in prices. Cement has undoubtedly benefited wonderfully from the active campaign of advertising carried on by its manufacturers and the fact that it broke its record in 1917 ought to be an encouraging sign to brick manufacturers to exploit brick and increase the consumption and production of this useful product.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

An Old-Time Member Detained at Home.

Secretary N. B. M. A.:

Enclosed find check for dues for the ensuing year in the N. B. M. A. Two months ago I expected to be with you at this convention, but, owing to the work going on here, do not deem it advisable to absent myself, as I cannot tell what moment I may be needed. The Snare & Triest Co. has the contract and is employing over three thousand men, building the U. S. governmental terminal on the Raritan river, and is certainly making a wonderful showing. The work is done so rapidly it makes one think of the tales of the "Arabian Nights."

Yours truly,

Metuchen, N. J. CHAS. A. BLOOMFIELD.

Texas Member Too Busy Building New Plant to Attend Convention.

Dear Mr. Secretary:

I am sorry I will not be able to meet with the N. B. M. A. this year in your home town, but I am too busy in the work of getting started the new plant of the Elgin Brick and Tile Co., in which I have an interest. Part of the machinery has been bought and we are getting along in good shape. The plant is located six miles east of Elgin, on the M., K. & T. railroad. We will make face brick in all the various shades, including manganese, iron spot, flashed and metallic face, as well as fire brick and building tile. Now, Friend Randall, when I get this plant built, I want you to come to Texas and see us.

Yours respectfully,

Elgin, Texas. A. J. KAUTZ.

Canadian Kept at Home Sends Fee.

Dear Mr. Randall:

Enclosed herewith find draft for $7.00, being my subscription to The Clay-Worker and the N. B. M. A. for 1918, which I consider some of my BEST spent money. I always take great pleasure in The Clay-Worker and the proceedings of the conventions, particularly since I have been attending. I regret to say I will not be able to be with you this year, as my father died on Thursday last, 88 years old, and in addition the thaw which we were waiting for all January has come, and looks like a flood in the river today. So I must stay home and look after the works should a big flood come.

Wishing the convention every sucess and enjoyable time, I remain,

Yours truly,

WM. BURGESS,
Don Valley Brick Works.

Toronto, Ont., Can., February 12, 1918.

Wants Information About Spark Plugs.

Editor The Clay-Worker:

I have secured the patent on a spark plug and am in the market for the manufacture of the porcelain part of the plug. Can you give me information as to the manufacture of porcelain articles. If you can it will be greatly appreciated.

Yours very truly,

Morehead City, N. C. CHAS. S. WALLACE.

Good Convention From Business Standpoint.

Dear Mr. Randall:

The writer arrived home safely from the convention and wishes to say that he had a very pleasant time while in Indianapolis, and from a business standpoint, we feel the convention was certainly of benefit to us. Hoping this finds you enjoying the best of health, and with kind personal regards, I remain.

Your truly,

Cleveland, O., Feb. 19. E. W. KINGSBURY,
The Scandinavia Belting Co.

Local Committees Complimented.

Dear Mr. Randall:

We are pleased to report that all of our representatives who were present at the recent N. B. M. A. Convention at Indianapolis report that the convention was not only very enjoyable, but also a very instructive one from all angles. They comment particularly upon the excellent manner in which the local committee handled all social and business affairs.

Very truly yours,

Chicago, Ill. A. W. KNIGHT,
Celite Products Company.

The N. B. M. A. Dinner "a Dream."

Dear Theodore:

Just a word to say that I certainly enjoyed the convention. While it was not so large, it was high in quality. The banquet was a dream.

Again thanking you for your many courtesies, I remain.

Very truly yours,

Anderson, Ind., Feb. 21, 1918. W. N. DURBIN.

The Convention an Inspiration.

Dear Randall:

As you know, I was one member of the executive committee tee, perhaps the only one, who questioned the advisability of holding a convention of the N. B. M. A. this year. I want to acknowledge to you now that I feel that it would have been a mistake to have omitted the convention and that it was a more practical exhibition of patriotism to attend the meeting last week and discuss the conservation of man power and fuel and more efficient methods of conducting our business than it would have been to have stayed at home and saved traveling expenses, even if the amount had been contributed to some of the war philanthropies. In other words, the saving in our business operations is of far, far greater importance now to ourselves and the nation than the small saving in personal expenses. It is to be regretted that more of our members did not look at it in this light or did not place their loyalty to the association above personal considerations.

It seems to me that special effort was put forth this year to make the meeting instructive and entertaining and I want to express my appreciation of the accomplishments of the secretary and of the local committees. We have never before been honored by such distinguished guests at our annual dinner and their eloquent speeches were an inspiration to all who had the pleasure of listening to them. In fact, every arrangement of the convention was handled in a superior manner. There were no disappointments for those present. The absent ones always lose, and in this case more than they will realize. It is to be hoped that the steps taken at this meeting to increase the membership of the N. B. M. A. and the attendance at the conventions will lead to gratifying results.

Columbus, O., Feb. 20, 1918. W. D. RICHARDSON.

Mississippi Member Enjoyed Convention.

Dear Mr. Randall:

Though we are back in Mississippi, our thoughts still persist in remaining in Indianapolis, and we wish to thank you and everyone connected with you for the royal good time we had while there.

Knowing that you are always interested in clay in all its various forms, we are taking the liberty of sending you one of our booklets containing an analysis of some of our products, hoping that you will find time to look over same.

With best wishes, I remain.

Yours very truly,
Enid, Miss. J. T. BRAMLETT,
General Manager Southern Ball Clay Co.

The Hoosier Convention the Best Ever.

My Dear Randall:

The undersigned, with his family, arrived home safely yesterday morning. All are of the opinion that the convention just ended was, socially, the most pleasant, and, instructively, the most profitable, that it has been their good fortune to attend, due to the warm hospitality of the Indianapolis people, to whom you will please convey our deep appreciation.

With kindest regards and my personal thanks, I am.

Yours very truly,
Detroit, Mich. GEO. H. CLIPPERT.

Congratulations From One Who Has Attended Many Conventions.

Friend Randall:

I wish to thank you very kindly indeed for courtesies shown us at the convention of the National Brick Manufacturers' Association held in Indianapolis last week. I believe this convention was handler more successfully than any convention I ever attended. Mrs. Dunn also has freely expressed herself as to the successful handling of the convention and the excellent entertainment afforded the ladies.

With best wishes, I am.

Yours very truly,
Conneaut, O. F. B. DUNN,
President The Dunn Wire-Cut Lug Brick Company.

Programme of the Illinois Convention.

Editor The Clay-Worker:

Our state convention will be held here in Urbana, March 13th and 14th.

The morning of the 13th will be given up to business and papers of general interest. The afternoon will be used by representatives of the various organizations for the presentation of papers before the whole gathering. In the evening we will have some form of entertainment, either a smoker or a dinner. On the morning of the 14th we will have papers, which will relate to the peculiar conditions which confront the clay industry at this time; that is, relating to fuel and transportation, etc. The afternoon will be given over to the different organizations for the holding of meetings of especial interest to their members.

I am just home from the N. B. M. A. It is my opinion that the recent convention in Indianapolis was most enjoyable and profitable. When one considers the state of our national affairs, due to the war, it was surprising and gratifying to find so many clayworkers gathered together to discuss questions of common interest. Those who had charge of the program are to be complimented and we are indebted to the local committee for the very hospitable treatment which we received.

With kind regards, I am,

Very truly,
CULLEN W. PARMELEE,
Secretary Illinois Clay Manufacturers' Association.
Urbana, Ill., Feb. 19, 1918.

OBITUARY

Death of a Pioneer Clay Machinery Manufacturer.

George B. Drennan, a member of the firm of The J. D. Fate Company, Plymouth, O., and for many years a conspicuous figure in the various national and state conventions of clayworkers, answered the final summons Feb. 6 at the home of his sister, Mrs. Geer, of Galion, O. He had been in failing health for some months past. Mr. Drennan was prominent among the business men of Plymouth. He served that municipality as mayor at one time and was a member of the City Council at different times. He was always foremost in promoting any public movement looking for the betterment of the community. In his death Plymouth loses one of its most popular citizens, a man of pleasing personality. He was considered a personal friend by almost every citizen. He was a Mason of high degree, having been for a number of years a member of the Knight Templar Commandery at Mansfield, and was also a member of other fraternal organizations. He had a wide acquaintance among the brick and tile manufacturers of the country, who will sympathize with his associates in their loss. To the older ones of the clay craft the passing of the pioneers, who played important parts in the affairs of the industry in days gone by, is a source of personal grief and brings home the fact that they themselves are on the shady side of the hill of life.

LUMBER DEALERS START SOMETHING.

The retail lumber dealers' associations, one after another, at their annual meetings have been adopting the following significant resolution:

"Be it Resolved, That it is the concensus of opinion of this convention that it is to the best interests, not only of the manufacturers, shippers, contractors and builders, but of the consuming public as well that cement and clay products be sold and distributed through the retail dealer only."

This resolution is significant not so much for what it says as for what it stands for. It is a plain indication that the retail lumber dealers of the country are recognizing the necessity for a broader view of their business and in this broader view they find it essential to include cement and clay products as factors and not merely as incidental items.

Also it may be presumed that this tentative asking of manufacturers of cement and clay products to distribute through the retail dealers means that the retail dealer himself intends to become more active in pushing these items. Logically, the retailer must become active in pushing any item which he asks the exclusive distribution of. This activity among the retail dealers should help boost the brick building game and it is up to the clayworking industry to get in touch, keep in touch, and see that their products are aggressively pushed by the lumber dealers as well as by themselves.

LOOKING FORWARD

IT IS only the pessimist who will endeavor to convince his hearers that the building prospects for the coming year are not of a hopeful character. The close student of events will have learned from a careful consideration of all the many factors controlling building operations that there is little uncertainty as regards the future of the building industry in 1918. He will not have failed to note that conditions have arisen that will make the construction of buildings of essential character an imperative necessity, and that their progress cannot with safety be longer delayed. That the general public, broadly interested in these matters, is getting this point of view is an encouraging sign at this time, but what is perhaps of greater importance is the fact that the shrewd, calculating element, the men who control the money with which building operations are financed, are again willing to enter upon negotiations for the financing of building operations. This fact, and the fact is established by actual transaction, will speak to the practical mind in a much more emphatic way, in a manner that will carry the weight of conviction, than any mere expression of opinion, even if it is based on long, practical experience.

The tendency of the loaning or investment element in the building field has always been considered the barometer by whose indications we can with a reasonable surety look into the future and map out our plans. The consensus of opinion, as expressed by officers connected with large loaning companies that have been interviewed on this subject, leads to the most optimistic views as to the future in the building industry. In view of the present very friendly attitude of capital toward building, there appears evidence of a present activity that may be regarded as the forerunner of a normal, healthy state of building operations.

Building projects considered two years or less ago, and abandoned because of high prices, scarcity of labor and the difficulty experienced in securing materials, are now being revived in every section. Some contracts have been already let, and the remainder are under serious consideration. With higher prices ruling for materials are the also higher income possibilities, and these offset each other in such a way that the value of the investment is not impaired, and, in fact, it has sometimes been found to be enhanced. Bills of quantities on these projects, figured two years ago, and figured today by the same bidders, have disclosed that the enhanced costs range in an excess of but from 20 to 30 per cent. With the demand for these structures, either from tenants, as in the case of loft and office buildings, or manufacturers who have large contracts to fill and who are in keen search of plants, the consideration offered in rentals or purchase price is in excess of the advance in construction costs, hence it does not, as a matter of fact, exist. There is no abnormality when an increase of income keeps pace with an increase in cost.

Information has been received from one architect's office of three projects whose history is similar to the example cited above, and it is learned that all these erstwhile abandoned projects were started toward quick completion last December. Many other instances of single examples are at hand, and it would appear that architects who have taken the trouble to keep in close touch with actual conditions, and have ignored the ill-advised utterances of a group of alarmists, have had no difficulty in impressing on clients the real truths that now affect the building situation.

Owners, too, are studying these questions for themselves, and when they have reached the correct conclusion and find it confirmed by the advice of their architects, are willing to proceed with these projects. They realize that it may be years before prices react, and do not hope for a return to a scale of costs such as existed, for example, during 1913 and 1914. They also realize that if prices should decline they will only do so as affected by a general decline in every other field, and as this would affect rentals and selling values sympathetically, a long term rental contract today becomes in a sense an insurance policy against future depreciation.

Further, these advantages in rentals affect buildings already constructed, in the same way that they do the ones now in course of completion, so that a general tone of confidence and stability is being formed, in spite of the many conditions that during more normal times might appear to be conducive to stagnation.

With these facts before us, it is highly probable that the amount of building that will be undertaken during 1918 will exceed that of any year since 1913.

With the present demand for housing accommodations, for office space and for the types of buildings necessary to afford shelter for all the varied branches of our industries now being pushed to their utmost producing capacity exceeding the supply, it is difficult to understand an argument that seeks to prove that the course of the building industry during the coming year will be other than one of steady and prosperous growth.

The questions of transportation are daily becoming of less serious nature. The lessons that have been learned since the outbreak of the war have shown that in the loading and routing of cars, the general handling of our transportation problems have, in spite of the loudly acclaimed efficiency, been wasteful to prodigality. With these things corrected and waste and inefficiency eliminated, our transportation problems are gradually being solved. And while today there is yet much to be accomplished, the question of transportation has ceased to be of sufficient severity to menace the conduct of building operations.

Normal building requirements alone would afford a healthy volume of business. To these must be added the enormous demands of the Government. Combining the two, we have as a result the prospect of an activity in the building-construction field unequaled since 1912.—American Architect.

MODERN TEN COMMANDMENTS.

FOR the benefit of persons with small sums to invest, the following ten commandments may prove of service:

I. Buy United States Government Liberty Bonds.

II. Teach your children to buy United States Government War Savings Stamps.

III. Look with suspicion upon anyone who, during the war, urges you to change the best investment on earth into any other form; turn a deaf ear to him.

IV. See that your bonds are safely locked away in a strong vault for protection.

V. Having laid a firm foundation for your future fortune, add to your investments as rapidly as possible.

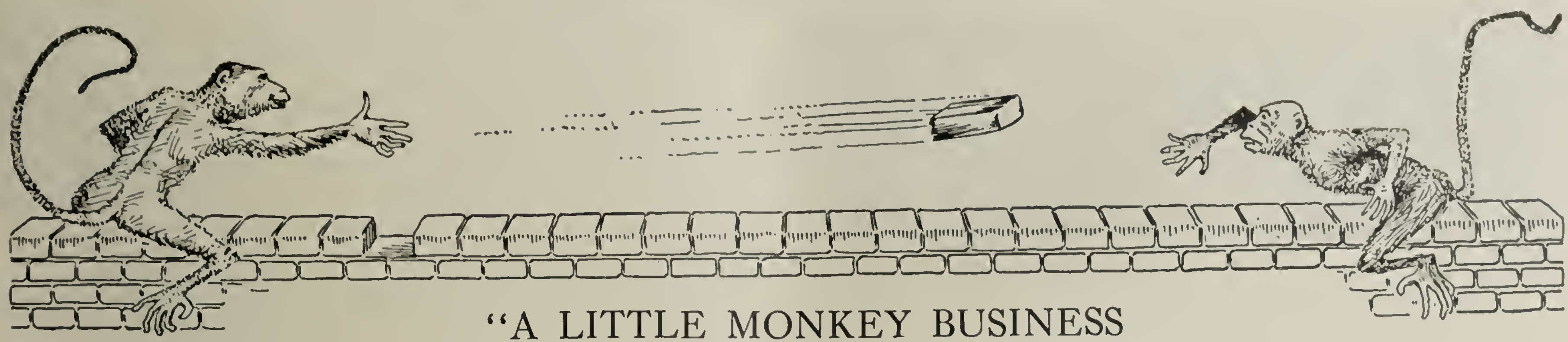
VI. Avoid speculation as you would a plague; rich men invest.

VII. Make a study of the principles of investing safely; investment bankers have a wide variety of free and excellent literature on the subject.

VIII. Choose an investment banker of known responsibility for financial advice; this is the most important step in your investment education.

IX. Adopt a policy of giving first consideration to the safety of your principal; one loss of principal is equal to nearly twenty years of income.

X. Be content with a sure, regular and moderate income.



"A LITTLE MONKEY BUSINESS NOW AND THEN IS RELISHED BY THE BEST OF MEN."

HOPELESS!

Tuesday meatless,
Wednesday wheatless,
Friday meatless, too.
Some days sweetless,
All days heatless,
Sherman surely knew.
C. B. WILSON.

PLANS FOR THE FUTURE.

An old lady visiting the prisoners in a certain prison was chatting with a burglar who had been sentenced to serve a long term; she thought she detected signs of reform in him.

"And now," she said, "have you any plans made for the future, on the expiration of your sentence?"

"Oh, yes, madam," he said, hopefully, "I've got the plans of two banks and a postoffice."

The old lady collapsed.

HERBIE HOOVER.

Little Herbie Hoover's come to our house to stay,
To make us scrape the dishes clean, an' keep the crumbs away,
An' learn us to make war bread, an' save up all the grease,
For the less we eat of butter, the sooner we'll have peace.
An' all us other children, when our scanty meal is done,
We gather up around the fire an' has the mostest fun
A-listenin' to the proteins that Herbie tells about,
An' the Calories that git you
Ef
you
don't
watch
out!
An' little Herbie Hoover says, when the fire burns low,
An' the vitamines are creepin' from the shadows, sof' and slow,
You better eat the things the Food Folks says they's plenty of,
An' cheat the garbage pail, an' give all butcher's meat the shove,
An' gobble up the corn pone an' veg'tables an' fish,
An' save your drippin' an' yer sweets an' lick clean ever' dish,
An' don't get fresh a-talkin' of what you won't do without,
Or the Calories'll git you
Ef
you
don't
watch
out!
—Sophie Kerr, in Life.

THE CHAUFFEUR'S POINT OF VIEW.

Alf T. Ringling, the circus man, took his chauffeur with him on a voyage to Porto Rico. The Brazos, on which they were passengers, was rammed in broad daylight by another steamer. The chauffeur attentively watched the two steamers approach closer and closer till they bumped. Then he said:

"Well, I'll be d——d! Them guys had th' whole ocean to get by each other in an' they couldn't pass without hittin'!"

FATHER GANDER.

There was a man in our town
And he felt wondrous wise.
"The men of science are," he claimed,
"Poor fools who theorize."

But when his business went to pot,
With all his might and main,
He called a ceramic engineer
To set him straight again.

METROPOLITAN LIFE.

Simeon Ford tells of a bucolic person who, immediately after his arrival in New York, observed the following legend printed on the hotel food card:

Breakfast	7 to 11
Luncheon	11 to 3
Dinner	5 to 9

"Merciful heavens!" exclaimed the ruralite to the man at table with him. "As I expect to git to bed along about 9, what chance am I goin' to git to see the town?"

SEE WHAT HE GOT.

A stingy Vernon farmer was scoring his hired man for his extravagance in wanting to carry a lantern in going to call on his best girl.

"The idea!" he scoffed; "when I was courtin' I never carried no lantern. I went in the dark."

The hired man proceeded to fill the lantern.

"Yes," he said sadly, "and look what you got."

"PAVE WITH BRICK."

One day the county commissioners met
And argued about the material to get
To fix up the roads to make traveling good
And have them the best that they possibly could.
One argued that crack' stone alone was the stuff,
Although it, at times, made the traveling rough.
Another said, "Asphalt is just what we need
To make the best road in the country." "Indeed,"
Said another, "I see you have very poor taste,
You must think the county has money to waste.
Just listen to me, while this thing I unravel,
To settle this thing, we'll repair it with gravel."
"But don't make your final decision too quick,"
Said the wisest of all, "why, we'll pave it with brick.
To pave them with brick you will show common sense,
For it banishes all the repairing expense."
So, after debating the question a while,
The wisest among them arose with a smile
And said, "You show wisdom when you make your pick;
It's the wisest decision to "Pave With Brick."
—James L. Carson.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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Six copies, " "	10.00
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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. FEBRUARY, 1918. No. 2.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Be a worker—not a wailer.

* * *

And the spirit of patriotism prevailed over all.

* * *

We need to enlist a much larger army of brick contractors to help promote the new building era.

* * *

War committees should strive to help promote war activities as well as preserve the welfare of the industries they represent.

* * *

The women folks have won a victory and the smokerette has become an established feature of the N. B. M. A. convention. There are to be no more stag social sessions.

* * *

Most every one who attended the N. B. M. A. convention had impressed upon them the importance of team work and co-ordination. Let us keep this thought alive and make it a practical working idea and not merely a passing thought.

Let us make "Better Homes" mean "Brick Homes."

* * *

Mechanical devices that will save man power are worth extra money these days.

* * *

The drain tile contingent was out in greater force than usual, which was good to see and is worth repeating.

* * *

A good idea to keep in mind for the busy season is to make more sales near home, and make more of motor truck delivery.

* * *

There ought to be a ready audience around the clay plant, for the man with fuel-saving ideas, for either power making or clay burning.

* * *

The cement folks spent a lot on publicity, and made a record production in 1917. This fact carries a moral and also furnishes a splendid example to follow.

* * *

Many have been predicting that peace will be followed by a great realty and building boom, while a few have asked, Why? That's a good question to think over and seek the answer to.

* * *

There was already considerable interest being shown in producer gas for brick burning, but the increased cost and scarcity of coal has greatly increased the interest there so that it was easily one of the leading subjects of inquiry.

ECONOMY IN LABOR AND FUEL BOTH ESSENTIAL.

One interesting point brought out by a group discussing improved methods for labor and fuel economy was that often those things in the matter of construction and detail which make for labor economy increase the fuel requirements, whereas, often things in kiln design and detail which make for fuel economy add to the burden of labor. It is plain to be seen that what we need is some co-ordination here of the efforts for fuel economy and labor economy to the end that we may have the greatest measure of both. For to gain one at the expense of the other is but half a victory at most, and what we need today is economy in both labor and fuel.

THE BEST CONVENTION EVER.

What everybody says must be true, and everyone in attendance at the Thirty-second Annual Convention seemed of one mind as to the success of the convention, declaring that it was "the best convention ever." It was a source of great gratification to the local contingent through whose effort this verdict was reached. As the reader will see when the proceedings are completed and given in full in the special convention number of The Clay-Worker, the papers and addresses were exceptionally able and instructive. The spirit of harmony dominated throughout the sessions. The attendance was really large, considering the prevailing conditions in the industry and the general distraction in all lines of business, due to the world war. Later on when the dove of peace again hovers over our nation, the N. B. M. A. will be invited to play a return engagement at the Hoosier capital, when a record breaking attendance will be assured. In every other respect, the convention, like those that have gone before, seemed to be the "best convention ever."

LET'S CO-ORDINATE.

Co-ordination is the order of the day now in industry, in warfare, in state affairs, and everywhere. It is being recognized as the next broad step following co-operation. Also it is being recognized both here and abroad that it is only through co-ordination that we can attain war and industrial supremacy. A good place to begin co-ordination is at home among the different branches of the clayworking industry We have been working for years to secure co-operation among members of the trade in a given branch and this work should but the beginning, however, and not the end. The ultimate may prosper more and be in better shape to serve the needs of the country.

FRUITS OF FRENZIED FUEL.

We have had a period of more or less frenzy in connection with the fuel supply, the fuel needs and fuel prices. And here as in the matter of frenzied finance, which we had with us in days gone by there is a chance to learn something worth while, to reap some benefits to console us for the burden of the times and to compensate for the losses. Perhaps the main fruits of the fuel frenzy of the winter will come through a more intensive study of fuel economy. We will not only practice fuel economy in our homes, but in power plants, in kiln burning and everywhere there will be exercised many ideas to save fuel and reduce the cost. Incidentally there should come from it new discoveries and inventions which will in the future make for greater efficiency and thus in some measure recompense us for the trying times we are going through at present.

THE MARKETING OF CLAY.

A report of the mineral production of Missouri, one of the good brick and clay product states, shows that in 1916 there was clay products produced to a total of $7,634,559.00. Then comes another item of clay mining with a total of $988,884.00. It is this item of practically a million dollars worth of clay mined and sold which serves to recall a subject The Clay-Worker has touched upon several times, that is mining and marketing clay. We are steadily developing a business in clay as a raw material, that is the mining and marketing of clay, and in the course of time when all clayworkers come to realize and to append a proper and fair value to their raw material this business of mining and marketing clay will show more growth and better profits. Clay is just as much a raw material as timber and the day is coming when the matter of mining and marketing of clay will be a factor of considerable importance in the clayworking business.

SOME BETTER HOMES PLANS.

Over in England where they have practically put a stop to all home building during the war period, plans are going forward now for a big campaign of home building and better homes when the war ends. They have what is known as the National Housing and Town Planning Council, the technical committee of which has presented some recommendations that should be of interest to promoters of better homes in this country.

It is calculated that 300,000 homes for working people should be built by the state in England and Wales, and it is figured there will be a big building boom on. The thing of particular interest in this country, however, is found in the following points to be observed in making plans for better homes, especially of the cottage class:

"The houses should be broad rather than deep to secure ample light.

"Back extensions are better avoided; all the rooms should be brought under the main roof.

"Three bedrooms should be provided in all the new houses.

"The houses should, as a rule, be provided with parlors.

"Each house should have a bath with hot water.

"Ample window space should be given and windows carried as near to the ceiling as possible.

"A layer of concrete or other approved impervious material should be laid under all floors to prevent damp rising, and a proper damp-proof course should be provided in all walls.

"The level of the ground floor should be above the level of the ground immediately surrounding.

"The assistance of women with close knowledge of household economy should be sought in regard to details of interior construction, such as the design of the stairs and the provision of cupboards, larders and storage accommodation."

CLAY PRODUCTS IN BRAZIL.

While considerable trade in fire brick and some in face brick has been developed with our Latin-American neighbor, Brazil, it would seem that the broadest opportunity in Brazil in clay products is to be found in pottery. One of the annual series of our consular reports from Brazil, however, coming to hand recently, indicates that we have not yet developed that field as we should. Tabulated statistics of imports given in this annual report show that in the calendar year 1916, Brazil imported porcelain and earthen ware to the total of practically a million dollars and the United States only furnished $12,117.00 of this. More than half of it was furnished by Great Britain, while Netherlands and France each furnished from four to five times as much as the United States. This looks like a good field for our pottery people to do some mission work and develop some export trade.

WAR TAX PAYMENTS.

Organized business here and there is expressing more or less apprehension that the payment of income and excess profit taxes, which will be due and payable on June 15, 1918, and, which will perhaps call for two billion dollars, will occasion such a strain on the banks and money market of the country that arrangements should be made or an amendment enacted by Congress to provide for quarterly payment. The idea is to lessen the strain by making this enormous tax payment in four installments instead of paying it all at once.

This is perhaps not as bad as it looks because the Secretary of the Treasury has been given authority to avert concentration of tax payments on one date by receiving through Federal Reserve banks subscriptions at par and accrued interest for a limited amount of U. S. certificates of indebtedness, dated January 25, 1918, due June 25, 1918, bearing interest at 4 per cent.

This will help out with some of the big industries, and perhaps some of the smaller taxpayers would prefer to pay the entire lot in one installment, but for many others there is reason to argue that four installments instead of one would not only relieve the strain on the taxpayers, but it should make it easier on the financial system of the country.

LOCOMOTIVE POWER.

One of the possible things which may eventually come from the overloading and the breaking down of our railway transportation is in the use of electric power to replace the steam locomotive in railway work. Already this has been tried on some eastern roads where water power is obtainable with splendid results, and it is readily admitted that with enough water power available it would be the logical thing.

It should be just as logical to produce electricity with steam power for operating locomotives as to produce it at a central power plant for driving industries. Moreover, coal miners are so widely distributed throughout the country that most of the central power plants could be located, either at or very near coal mines, and in this way the production of electric power through the use of steam would become almost if not quite as economical as the production of electricity through the use of water power.

One of the things which helps congest traffic and makes a big tonnage burden on the railroads is the hauling of coal for use in locomotive engines. It is not the purpose here to go into the dry statistics of this, but any one at all familiar with the matter can readily understand the enormous tonnage of coal moving from the mines to the coal chutes of the railroads for supplying locomotive fuel. With this eliminated together with the necessity for pulling a steam boiler and tender tank with its burden of coal there would be enough freight saving to relieve most of the congestion today. Moreover, the power production would be put upon a proper economic basis, where being located at the mines steam power might well compete even with water power. No matter whether we have government ownership or return to private enterprise with the railroads after the war, the use of the electric current with power plants at or near the coal mines would do much to improve the efficiency of railroading.

DRAIN TILE MANUFACTURERS SELECT A WAR COMMITTEE.

The drain tile manufacturers of the country, at their meeting February 12th, Claypool Hotel, Indianapolis, Ind., discussed thoroughly the coal and car shortage and other problems they are facing, and after careful consideration selected a war service committee of able, well-known manufacturers, who will look after the interests of the entire trade. Each state organization appointed three delegates, including chairman; the chairmen then meeting, nominated from among their number a permanent chairman, D. C. Haeger, of the Haeger Brick and Tile Co., Aurora, Ill., who will call the delegations together whenever it is deemed desirable.

The delegates selected to represent the various state organizations are as follows:

Ohio—J. Leo Childs, A. H. Wehinger and H. Landrum.

Illinois—D. C. Haeger, S. D. Knight and J. A. Reeves.

Michigan—Robert Walker, Mr. Veneklausen and Mr. Taber.

Indiana—Fred Baum, L. R. Whitney and George M Krick.

Iowa—W. E. Elton, C. B. Platt and one other to be selected.

During the course of the day's conference many splendid speeches were made, points of general interest being brought out, such as the stock on hand, the question of eliminating certain undesirable sizes and the position of the government in regard to shipments of coal and tile. These talks showed that a large stock of drain tile was on hand with a dire need for coal and car service. One concern reported that they had nearly 900 cars of tile in stock, with little chance of moving much of it at this time, and declared that the drain tile business was not a bed of roses, as some people were trying to picture it.

MEETING OF THE BOARD OF DIRECTORS OF THE N. P. B. M. A.

The board of directors of the National Paving Brick Manufacturers' Association, at the meeting in Indianapolis, February 12 and 13, took under consideration some important amendments to the constitution, the adoption of which, it is believed, will greatly add to the importance and strength of this Association in its work.

They concurred and endorsed the action of the office committee in joining the recently organized Highways Industries Association and advised each individual company to become a member of the same.

Upon the recommendation of the executive committee, the assessments for the maintenance of the organization remain the same as heretofore.

The War Service Committee of the Association, which has been in communication with the fuel administration at Washington, reported progress, but was unable to announce any conclusion, as a further conference was shown to be necessary, which will take place at a time agreeable to the fuel administration.

Secretary W. P. Blair was selected to represent the Paving Brick Association on the board of directors of the Highways Industries Association.

Table of Contents

The N. B. M. A. Convention 125
Convention Personals 127
Among the Live Wires of the Convention 120
With the Souvenir Dispensers 134
N. B. M. A. Numerical Roster 135
Verbal Contracts Do Not Protect the Seller....... 137
Twentieth Annual Meeting American Ceramic Society 138
The Advantages of Clay Storage 142
Northwestern Clay Men Prove Live Wires....... 144
Nebraska Brick Men Meet at Lincoln 146
Canadian Convention Well Attended 147
Review of Wisconsin Clay Manufacturers' Convention 148
The Fuel Values of Various Coals, Oils and Producer Gases 150
Southern Brick Manufacturers Meet 152
Burning Clay Wares 153
How to Report New Income Under War Revenue Act. 155
War Conference Takes the Place of Usual Iowa Convention 158
Brickmaking as Is 159
Obituary—Death of George B. Drennan 161
Looking Forward 162
Modern Ten Commandments 162
Drain Tile Manufacturers Organize 181

CORRESPONDENCE:

Pacific Coast News 141
Brick News from Southern Indiana 157
An Old-Time Member Detained at Home 160
Texas Member Too Busy Building New Plant..... 160
Canadian Kept at Home Sends Fee 160
Wants Information About Spark Plugs 160
Good Convention from Business Standpoint 160
Local Committees Complimented 160
The N. B. M. A. Dinner a Dream 160
The Convention an Inspiration 160
Mississippi Member Enjoyed Convention 161
The Hoosier Convention the Best Ever 161
Congratulations from One. Who Has Attended Many Conventions 161
Program of the Illinois Convention 161
Seen in New Jersey....... 190
Brick News from the Twin Cities 194
With Cincinnati Brickmakers 197

EDITORIAL:

Current Comment 180
Economy in Labor and Fuel Both Essential 180
The Best Convention Ever. 180
Let's Co-Ordinate 180
Fruits of Frenzied Fuel.... 181
The Marketing of Clay.... 181
Some Better Homes Plans. 181
Clay Products in Brazil... 181
War Tax Payments 181
Locomotive Power 181

MISCELLANY:

A Little Monkey Business. 163
A Record Year in Cement.. 159
Lumber Dealers Start Something 161

INDEX TO ADVERTISEMENTS ON PAGE 198.

DREDGING PASSAIC RIVER TO RELIEVE SHIPPING CONDITIONS.

Renewed agitation of dredging the Passaic river from Passaic to Paterson, so barges and other craft can sail up as far as Paterson with coarse freight, including brick and tile, is interesting brick men. If this can be done, and it looks more like it now than it ever has before, it would relieve the freight congestion by just that much. All building operations could be carried on cheaper because of the reduced cost of freighting brick into Paterson. A bill is shortly to be introduced in the legislature, annuling the charter of the Dundee Dam and Power Company, which maintains a dam across the Passaic just above the head of navigation. With this dam out of the way, government engineers say the whole scheme is practicable, and intimate they will make a report to the government favoring the dredging operations. Along with this is going an agitation to reopen the Morris & Essex canal, which can be profitably used for the same purposes. Both waterways would go far toward solving some of the freight difficulties which now confront anyone who undertakes to ship raw material or finished goods in or out. Builders suffer most because they have the most bulky freight.

e Has Made Good!

OUR RECORD

January, 1918

You have given us a wonderful business during the year 1917.

You have called on us to test your clays, for unbiased engineering advice, and you have obtained the best that our engineers could give.

You have been met with a spirit of fairness in all of your dealings with us.

You have been given a service that does not consider an order closed until you were satisfied===a service that holds your confidence our greatest asset.

America has entered on a wonderful adventure===old aims and methods are obsolete===conservation is 1918's watchword.

You must conserve fuel and labor. "INTERNATIONAL SERVICE" in engineering and equipment, in drying and burning with producer gas, is at your command.

ACHINERY COMPANY

IO, U.S.A.

EDITORIAL NOTES AND CLIPPINGS—Continued.

have not been spared to install machinery of the most modern types.

The Kingsland Shale Wire-Cut Brick Company has been incorporated at Paterson, N. J. Alpheus M. Krantz, of 356 Eighteenth avenue, Paterson, is chief stockholder.

Honors seem to be coming to the Clipperts just at present, Charles F. Clippert, general manager of the George H. Clippert & Bro. Brick Company, of Detroit, having recently been elected vice-president of the Detroit Builders' and Traders' Exchange.

James M. Esler, receiver for the Freeport Clay Products and Minerals Co., will present a petition to the judges of the District Court of the United States for western Pennsylvania February 16, asking instructions for the immediate sale of the company's properties.

J. M. O'Neal, secretary and manager of the City Lumber Company, of Charleston, Miss., writes that his firm anticipates going into the brick business in the very near future, and would like to get in touch with manufacturers of brick machinery and supplies.

At the annual meeting of the Oskaloosa Vitrified Brick Co., Oskaloosa, Iowa, R. M. Boyer was elected director to take the place of Earl Bridges, who is now in service in France. The president, Harry Phinney, and Secretary-Treasurer, A. P. Spencer, were re-elected, and Mason Chilcote will continue as manager.

The Bennettville Brick Company, of Florence, S. C., has been organized, with Lincoln S. Morrison, president and treasurer; John B. Morrison, vice-president, secretary and manager. The plant now has a daily capacity of 40,000 common building brick. The property of the company includes 147 acres of clay lands.

The Columbia (Mo.) Brick Co. has installed electricity in its plant, using power from the city plant. The company has contracts for its entire output of fire brick and fire clay for a year. The contract calls for approximately fifty carloads of brick a month. The capacity of the plant is 15,000 bricks a day. Forty men are employed and the pay-roll amounts to $700 a week. The products of the plant are shipped to Kansas, Oklahoma, Nebraska and Iowa.

At the annual meeting of the Gethmann Brick Co., of Gladbrook, Iowa, the reports showed that the company had a good year in 1917, and that the prospects for the coming year were very favorable under the circumstances. The following officers were elected: A. E. Steward, president; J. G. Ralston, of Waterloo, vice-president; J. W. Schreiner, treasurer; Adolph Gethmann, secretary. John Gethmann will manage the Reinbeck yard and J. W. Schreiner the yard at Gladbrook.

With the beginning of the new year the brick manufacturing concern known as the Clymer Brick and Fire Clay Co., of Clymer, Pa., became the Hiram Swank's Sons, whose main offices are in Johnstown, with branches in Philadelphia and Pittsburgh. This plant formerly manufactured radical chimney blocks and building brick, but is gradually changing its output to fire brick. Shipments of the new brick are now being made to the eastern markets. Extensive improvements have been planned for the Clymer plant, but the severe weather delayed them considerably. Murray H. Thompson is manager of the Clymer plant. In addition to the operation of this plant the company has plants at Irvona, Clearfield and Johnstown, with a capacity of 50,000,000 fire brick annually.

The annual report of the Illinois Brick Co., Chicago, Ill., for the year ended December 31, 1917, shows net earnings of $280,073, compared with $674,542 in 1916. After the payment of dividends and charges there was a deficit of $1,927. No deduction was made for depreciation. Balance sheet showed total assets of $6,671,229, and surplus of $387,617. In his remarks to stockholders, President Schlaike said in part: "Building operations were almost suspended toward the end of the year. Our relations with labor are entirely satisfactory and the fact that the American people are quick to adapt themselves to changed conditions leads me to believe that the outlook in our line of business is fairly promising for the current year. Our plants were maintained at the usual high state of efficiency." All of the officers of the company were re-elected.

Written for THE CLAY-WORKER.

SEEN IN NEW JERSEY.

THE LACK OF SUITABLE houses for the steadily incoming stream of workmen in the various shops and mills has influenced the Chamber of Commerce of Paterson to appoint a special committee to investigate the question and report upon the practicability of a number of plans to improve the situation. The committee has appointed a sub-committee which is investigating the proposition from a number of different angles.

The situation is this: The Cooke division of the American Locomotive Company wants to add 800 skilled men to its present force here, but no houses can be obtained for them to live in. And various other mills and factories are considering enlarging the number of men employed. No apartments or single houses suitable for workmen of the chaarcter that will be required by these shops and mills are available, consequently it is necessary to either build, or induce someone else to build. Sub-committees are rarely useful, but this one is saved from the common end of such committees by the presence in its membership of Nathan H. Sloan, a live wire brick man, who doesn't purpose allowing it to go to sleep as most of them do. And he is making his influence felt in the matter very strongly. Obviously brick and clay men can rest assured that if any new dwellings of the type mentioned are erected, Mr. Sloan will exert his efforts to have them made of brick.

The National Silk Dyeing Company is considering a housing proposition of its own to provide homes for its employes at the Dundee Lake plant, which is on the outskirts of Paterson, but across the Passaic river in Bergen county. The plans are not definitely shaped yet, but the operation will be of considerable magnitude, and the houses erected will be worth while.

Other cities are in the same condition. Newark, for example, with the immense shipyards and other government work developing there, must have more homes for its workers, else it will be impossible to obtain them. And Jersey City is in the same position. On the outskirts of Jersey City an experiment is being tried in the erection of four and eight-family apartments to rent for not exceeding $20.00 a month. From $20.00 to $25.00 seems to be about the figure which most of them want to pay, and investors will be invited to consider the construction of houses of this type.

Common brick have advanced in New Jersey and are now quoted at not less than $13.00, and some a little higher. Fire brick and face brick have also advanced, and the tendency of all is still sharply upward. In fact, the outlook doesn't favor extensive building operations the coming spring because of the high cost of all material. Brick are frozen into the ice on barges which were caught during the first freeze in the early part of the winter, and the weather has not moderated sufficiently to release them. It is almost impossible to get permits to ship brick during the freight congestion, unless they are for government work. Not much is done, anyhow, the severe weather tending to stop all operations, unless they were covered in and the work can go on protected from the severe cold.

N. H. Sloan, of Paterson, has received a request from the government to bid on 300,000 brick for the erection of a storage warehouse at Camp Merritt, in Dumont. This is the camp from which all the soldiers going to France are sent. They go there and wait for ships. Mr. Sloan has one government job now and this will make him a second within a year. He will very likely get it, since the quality of the brick he handles and the prices at which he can dispose of them make them very attractive to buyers for the government.

Campbell Schultz, a dealer of Passaic, is undergoing misfortunes this winter. He has a barge of brick which he has wanted very badly for some weeks, frozen into the Passaic river in ice so thick and solid nothing short of a dynamite blast can move it until the warm weather gets busy. It is hard for him to get his brick through by rail, because of the freight congestion, all of which tends to reduce business in his vicinity. A. L. B.

If you had all of the COAL and all of the LABOR in this country at your disposal, you still could not afford to be without the

Underwood Patented

Producer Gas

Burning System

for burning clay products in periodic kilns.

You may consider this an extravagant statement but the fact remains that it behooves everyone engaged in the industry to conserve these two important resources and not permit profligate waste to obtain.

The Underwood System is economical from every viewpoint, but especially so in the matter of saving fuel and labor, as is well evidenced by those who have already installed it and which will be demonstrated in your case if you would just give us the chance to show you what we will do. May we not have this opportunity?

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

A warm welcome will be extended everyone calling on us at our headquarters at the forthcoming convention of the N. B. M. A., Room No. 744, Claypool Hotel.

THE ADVANTAGES OF CLAY STORAGE.

(Continued from Page 143.)

is possible to take from extreme ends of the piles, so that the clay from various parts of the bank is mixed together. This mixing of the clays from different parts of the bank is a very important advantage, and one that would be a wonderful advantage in a great many plants that have variable clay banks. A system of this sort also permits the economical use of a great deal of grog that otherwise might go onto the dump, as it does in so many plants in some parts of the country.

There is no doubt that there are some plants fortunately situated so that the storage of clay is not necessary and where the clay is hauled directly from the mine to the gravity bins, so that it can be fed direct to the pans. On the other hand, if the matter were investigated thoroughly, and losses studied more carefully, the writer believes that there are cases where the operators would find that the actual cost per ton of marketable ware could be lessened by installing storage systems; i. e., they would more than save the extra cost of handling clay, in the higher percents of marketable ware they would get due to having uniform material to work with, and being able to better systematize their burning, etc.

Suggestion for Simple Installation. There are a good many overhead bucket conveyor systems in use in various industries, and these systems are comparatively simple and do not represent a large investment. Where it was desired to get a uniform mixture of clay from various parts of a bank, it could be done without great expense by having an equipment similar to Fig. 12. This would eliminate pan wheelers and leave the clay exposed so it could weather quickly without the use of steam supply pipes beneath. In the case of heavy shales, it might be necessary to install a crusher, but this would be warranted as it would eliminate the usual sledgehammer labor and heavy pan duty that so many plants are now needlessly contending with.

In conclusion, the writer wishes to thank Gladding-McBean and Company for permission to describe their system, and for the photographs furnished.

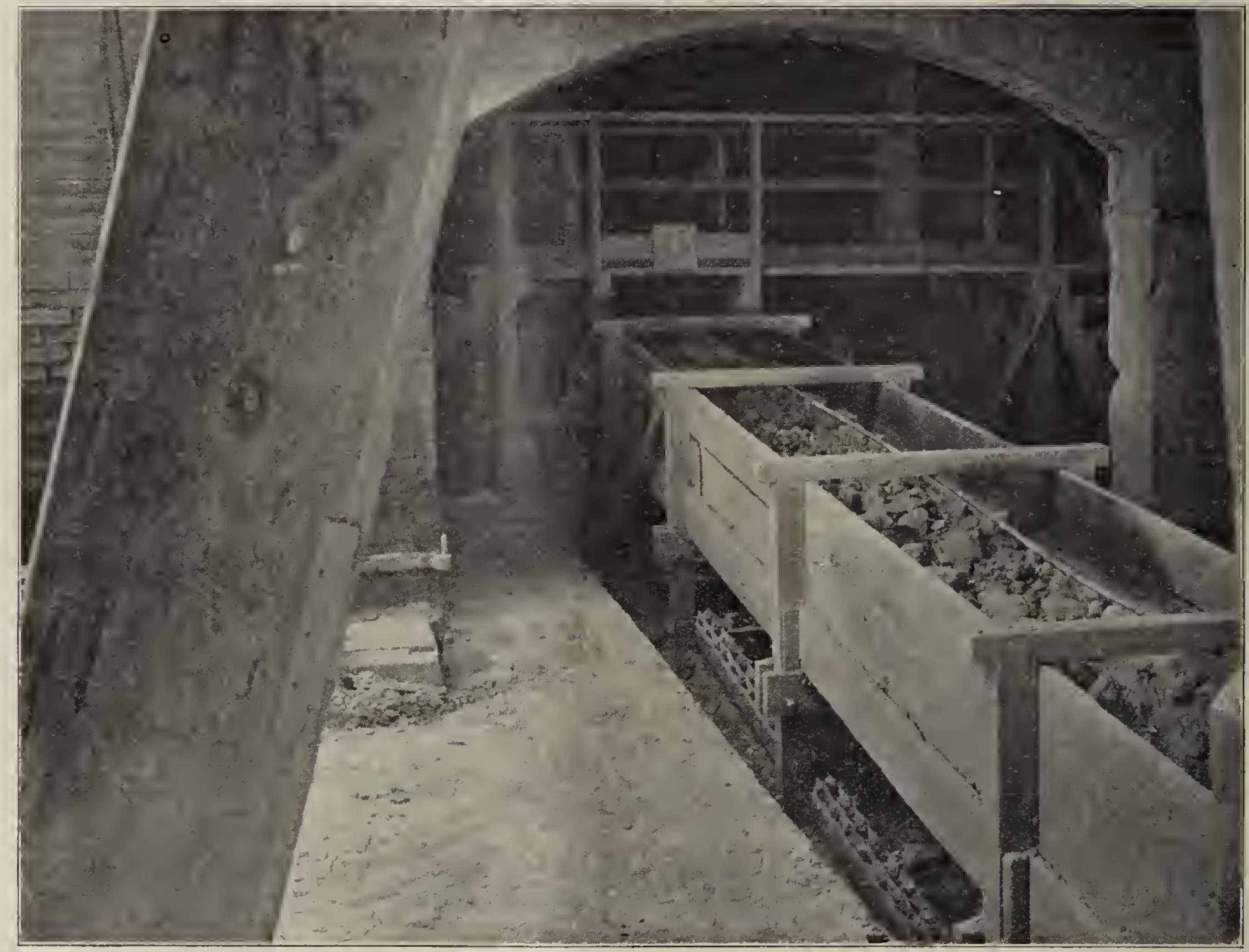

Figure 9.

DISCUSSION.

Mr. Blair: There is just one little point in connection with this paper that I would like to call attention to and not by way of criticism of such installation. If you will notice that suggestions for installations of this character nearly always come from industries or from the portion of the clay industry where the price per ton of material handled is the highest price obtainable. The portion of the industry, that needs such an installation the most, those handling heavy tonnage at a low price, is the one without it. Whether the one has a bearing on the other, whether they cannot get the money by selling paving block, for instance, at $11.50 per thousand or $2.10 per ton as compared with the terra-cotta plant that sells at $35 or $40 a ton or an iron and steel mill that runs from $37 to $100 a ton for their product—whether the price per ton of the material to be handled has not something to do with the lack of installations of this character, is a question.

Mr. Riddle: If Mr. Blair will study the detail of the paper as to the number of men required to operate this system as compared to the usual number around any brick plant where they have the same climatic and clay pit conditions, I think he will find that there is a saving in that particular operation. If there is a saving in the operation it would seem to the writer that the investment was warranted regardless of selling cost. As stated, this particular installation was used in the manufacture of several products including brick, sewer pipe, partition tile, etc., as well as terra-cotta.

Mr. Moore: I am familiar with a paving brick plant that is

(Continued on Page 194.)

Put the weather man out of business

With

The National Exhaust Steam Drier

Mr. Brickmaker:

You can be entirely independent of the weather, run your plant every day, if you want to, winter or summer, rain or shine, if you have a National Brick Dryer.

Send for Catalog

THE NATIONAL DRY KILN CO.

INDIANAPOLIS INDIANA

THE ADVANTAGES OF CLAY STORAGE.

(Continued from Page 192.)

handling a product not quite so expensive as this, but they are obtaining an average price of $18.75 a thousand for their block, and their installation as far as the weathering conditions and air system is quite similar except that it did not have the clam shell distribution feature, it is all handled by belt conveyors, dumped in different portions, and the pickup is done by underground conveyors. I should say that the installation cost within probably 20 percent as much as this, and they could not operate very well without it.

Mr. Binns: I want to ask a question with regard to nomenclature. The title of Mr. Riddle's paper, was "The advantage of a clay storage," and he used the term "weathering." Is storage under cover weathering in the proper sense of the term?

Mr. Riddle: When I spoke of the question of weathering, I described a simple installation where you would use a series of poles to support the tracks for the conveyor. In that case there would be no roof, and that would be a cheaper arrangement. The point I mentioned in this first one, the elaborate system, was that they were in a country where it rained in the winter time and required the cover to keep the clay dry. There is no doubt, however, that weathering can be accomplished to some extent with the clay covered. Where steam pipes are used beneath, this weathering can be accomplished very well.

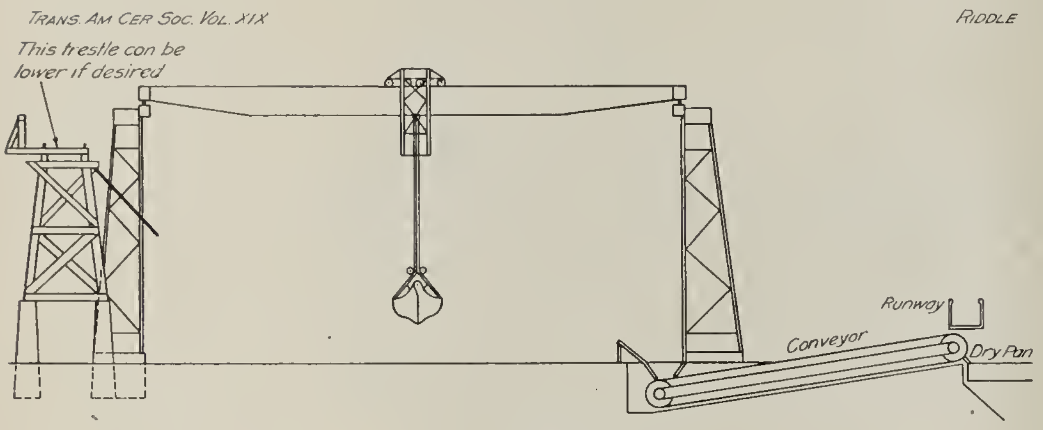
TRANS. AM CER SOC. VOL. XIX
RIDDLE
This trestle can be lower if desired
Runway
Conveyor
Dry Pan

Figure 10.

Mr. Binns: I thought it was the advantage of weathering, the solution of soluble salts, etc., and I wanted that cleared up.

Mr. Riddle: The design of the system should be made according to the local conditions. If dry storage alone was desired, a cover should be used. If the system is to be designed to expose the clay to the elements and wash out the soluble salts, then, of course, the roof would be omitted. The term weathering, as I have used it, means the disintegration and softening of the lumps. Weathering does not necessarily include the washing out of any soluble material.

Mr. Binns: Some years ago there was a case raised of a buff brick developing a brown stain by the clay being stored under dry cover. The experiment of turning out the clay into the open was tried, and the brown stain disappeared. So far from storing under dry cover eliminating stain, it is quite possible and probable that it will increase stain rather than diminish it.

Editor's Note—The man who designed the clay handling system for Gladding & McBean is Leland S. Rosener, Consulting Engineer, Insurance Exchange Building, San Francisco, Cal.

The kind of people prosperity spoils is generally those who have not earned all the prosperity that comes their way.

Written for The Clay-Worker.

BRICK NEWS FROM THE TWIN CITIES AND THE NORTHWEST.

THE NEW YEAR has not started off very favorably for building so far, but there is a fair prospect for it picking up before the spring is far along. The winter is always an uncertainty, at best. Sometimes there are many buildings contemplated, but few go ahead. Other times there are but few ,but more of them mature. So far in 1918 the prospects have been limited, but what few have come up at this writing have shown more of a percentage of going ahead than was the case a year ago. This establishes a better outlook in a way, for people who contemplate building now know that prices are high. A year ago they were not aware of high prices until they took figures, which resulted in a large number of buildings being deferred. So far, although there have been but few buildings figured, comparatively, nearly all have been let on contract. More work is gradually coming to light, and unless there are unfortunate moves made in Washington this will continue to be the case.

The building ordinance of Minneapolis has been amended to allow the use of hollow load-bearing tile of less thickness of web than has been the case heretofore. Tile makers have complained that their tile, although far exceeding the ordinance requirements as to strength, yet because the web was not 20 per cent of the thickness of the tile, was excluded. The ordinance has been amended to allow other tile than the two or three with all the details of the old ordinance.

Some time in April the Minneapolis Builders' Exchange expects to occupy its new quarters in its own building at 611-615 Second Avenue South, a twelve-story building, now under construction and nearing completion. It is believed that this is the first case of a Builders' Exchange occupying its own building. The local face and common brick interests are prominent in the exchange. Various brick men have been on different committees in connection with the new structure. It is understood that a number of the brick firms will have quarters in the building, though no announcements have been given out of tenants as yet.

The Northwest Face Brick Association has completed its first year and started on another year with bright prospects. The association has been most helpful in a year when business was very slack, and has more than justified its existence. It is operated on the open price policy, and, as a result, there is harmony among the face brick men where there used to be distrust and enmity. Expensive and unnecessary selling and soliciting steps have been cut down, and only normal and legitimate expenses are now incurred. This means less selling cost and a better chance for the owner to get value received.

The Minneapolis Industries Association has work started on a large wholesale warehouse on its tract in northeast Minneapolis. Splady, Albee & Smith have the general contract for the building, which is to be a warehouse, four stories, 80x480, and costing about $175,000.

It is expected that the high prices of farm products will mean more building by farmers than ever before this season. Brick and tile men are hopeful of getting a larger share of this business than usual, as a result of some of the publicity which has been extended to possible owners through various sources. Radial tile silos, tile hoghouses and barns, brick homes have all been featured to some extent, and there should be more interest by farmers as a result. One thing which may prove helpful to nearby yards is the ability to deliver without shipping by rail, which may prove a factor with the car situation as stringent as it is and has been for some time.

T. WIN.

Written for The Clay-Worker.

WITH CINCINNATI BRICK MANUFACTURERS.

THE REMARKABLE WEATHER that has visited this city and vicinity for the past two months, wherein records have been broken, has not been a help to the building industry, were there no other serious obstacles to overcome. But in addition to the very severe weather and the ice and snow, there has been the war and its effects. The brick men are simply biding their time and hoping against hope that at times does not look favorable.

At its general meeting on Jan. 29 the name of the Builders' and Traders' Exchange was changed to that of the Builders' Exchange. There will also be a new plan of procedure with regard to the operation of the organization. More modern ideas are to be applied to the exchange, and a grouping of the membership by classes is to be inaugurated. This plan will be found a help inasmuch as it will enable one class of members to form a suborganization, and in general the exchange will become more effective as an association.

Frank W. Folz, of Frank W. Folz & Co., contractors, has been appointed trustee for the Anders Shale Brick Co., who filed a petition in bankruptcy several weeks ago. His bond was fixed at $20,000. No developments have transpired as yet with regard to the future of the concern.

The Gem City Brick Co., of Dayton, O., is said to be closing out its business. The present conditions in the brick industry are presumed to be the reason. This concern sold face brick.

A school building is to be erected at Lebanon, Ky., to cost about $40,000. It will be of brick and stone construction. It will contain some modern ideas. C. C. and E. A. Weber, this city, are the architects. The same architects have plans for a Masonic lodge building to be built at Middleport, O. It will cost $25,000 and be two stories of brick and stone construction.

A three-story terra cotta front building will be erected for the Franklin Motor Car Co. on Gilbert avenue, to cost near $60,000. It will be 60 by 96 feet. Dittoe, Fahnstock and Ferber are the architects.

Conditions with the Moores-Coney Co. are quiet, according to the report by Mr. Jackson. There is not anything of a favorable nature as far as the near future appears.

The Ohio river was on a rampage here for some days, and a great deal of damage has been done to boats, barges and other river property as well as buildings so far as can be learned no great amount of damage has been done to the brick industry here as yet. The barges and wharf of the Blair Brick Co. have been thus far held intact, but it is not certain that they will escape damage when the thaw comes.

A branch of the Cincinnati Sewer Pipe Co., on the river front, was in the path of the flood and did not escape the ravages of the water and ice. Water reached the office to some extent, and while the damage is not likely to be great, still it was sufficient to interfere with operations. The books and other data was taken out in time. The company may not open an office there again, and will probably secure a new yard out of the flood district. The company operates another yard and the business is being handled from this one at Norwood. Little stock is carried there—at the river yard in the winter months. Business is quiet with the company.

E. F. Grand, a member of the firm of Purcell-Grand Co., face brick dealers, has been doing guard duty during the flood, he being a member of the Home Guards here, who had been assigned to take charge of the flooded district during the high tide. He had an amusing experience with a band of colored people who tried to pass him one Sunday morning about 2 o'clock. They were bent on being baptised in the icy waters of the Ohio. However, he prevailed upon them to wait for a time and not take a chance of losing their lives in the water at this season.

The Cincinnati Clay Co. say that while the demand for sewer pipe is fair and other clay lines are slow, the call for fire brick is good. The coming of warmer weather should be a help in making business better for all their lines.

Little is doing with the Builders' Brick Co., and Mr. Riggs says that the weather will have to become more favorable before there is any improvement in conditions.

The Cincinnati Clay Products & Supply Co. finds the present very slow and the demands to be only nominal.

CINCY.

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INDEX TO ADVERTISERS

Alton Brick Co. 120
American Clay Machinery Co., The 183-186
American Process Co. 205
Anderson Foundry & Machine Works 112
Atlas Car & Mfg. Co. 224
Arbuckle & Co. 216, 217
Baird Machinery & Mfg. Co. 224
Ball Engine Co. 117
Barber-Greene Co. 122
Barr Clay Co., The 120
Books for Clayworkers 218
Bonnot Co., The 107
Boss, John C. 198
Brewer, H. & Co. 219
Brown Instrument Co., The 195
Build With Brick 208
Caldwell, H. W. & Son Co. 202
Cannelton Clay Products Co. 121
Carnell, George 204
Chambers Brothers Co. 123
Chase Foundry & Mfg. Co. 224
Chattanooga Paint Co. 202
Chicago Brick Machinery Co. 116
Chisholm, Boyd & White Co. 110
Clinton Paving Brick Co. 121
Danville Brick Co., The 120
Dickinson, W. W. Jr. 211
Didier-March Co 210
Drying Clay Wares 118
Dunlap Manufacturing Co. 206
Eagle Iron Works 205
Eastern Machinery Co., The 214
Engelhard, Charles 203
Fate, J. D. Co., The 222, 223
Frost Mfg. Co., The 221
Freese, E. M. & Co 220
Gandy Belting Co. 197
Geijsbeek Engineering Co. 204
Harrington & King Perforating Co. 108
Hoehne, Richard B. & Associates 113
International Clay Machinery Co. 188, 189
Klose, A. 203
Kushequa Brick Co. 120
Kushequa Keramic Co. 120
Lake Shore Shale Brick Co. 120
Lakewood Engineering Co. 224
Leary Mfg. Co., W. J. 119
Lovejoy, Ellis 207
Mantel, Tile and Grate Monthly. 201
Manufacturers Equipment Co., The 191
Marion Machine Foundry & Supply Co. 198
Mathews Gravity Carrier Co. 108
Mayer, C. P. 121
McAvoy Vitrified Brick Co. 120
Medal Paving Block Co. 120
Mentz Co., The G. B. 205
Metropolitan Paving Brick Co. 120
Mittler Wire Mfg. Co. 205
Morgan, F. W. & Co. 198
Murphysboro Paving Brick Co. 121
National Dry Kiln Co. 193
National Paving Brick Manufacturers' Association 120
Ohio Galvanizing & Mfg. Co., The 204
Parker-Russell Mining & Mfg. Co. 202
Phillips & McLaren Co. 203
Potts, C. & A. Co. 213
Purington Paving Brick Co. 121
Ricketson's Mineral Paint Wks. 198
Rodgers, L. E. Engineering Co. 109
Roessler-Hassslacher Chemical Co., The 203
Scumming and Efflorescence 204
Shawmut Vitrified Paving Brick Works 120
Standard Dry Kiln Co., The 124
Steele, J. C. & Sons 106
Terre Haute Vitrified Brick Co. 121
Thew Automatic Shovel Co. 212
Thwing Instrument Co. 206
Tile Underdrainage 152
Toronto Foundry & Mach. Co. 206
Trautwein Dryer & Engineering Co. 115
Vitrified Paving Brick 120
Wallace Mfg. Co. 215
Webster & Kincaid 209
Westinghouse Elec. & Mfg. Co. 114
Williams, C. K. & Co. 203
Yates, Alfred 202

SEE TABLE OF CONTENTS, PAGE 182.

ORIGINAL Boss SYSTEM Drying and Burning ORIGINAL Boss SYSTEM

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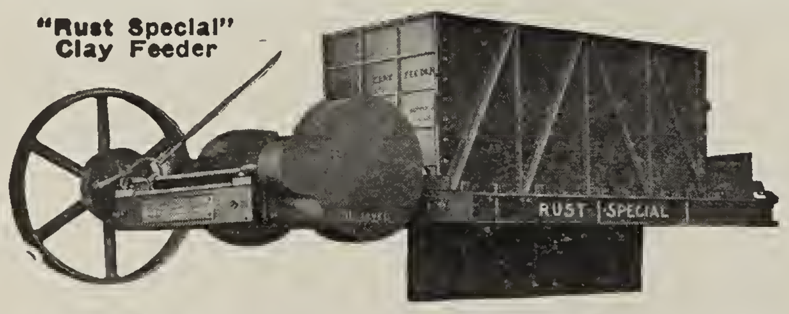

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. LXIX. INDIANAPOLIS, IND., MARCH, 1918. No. 3.

N. B. M. A. Banquet

Proceedings of the Associational Dinner, Which Under the Direction of the Hoosier Committee on Entertainment Proved a Most Enjoyable Affair. Patriotic Speeches by Distinguished Guests Made the Event One Long to be Remembered.

PATRIOTISM was the keynote at the Thirty-second Annual Convention of the National Brick Manufacturers' Association held at Indianapolis February 11 to 16, 1918, and it was the particularly dominant feature at the associational dinner, which was held in the famous Riley Room of the Claypool Hotel on Thursday evening. Those participating declared it was in every respect one of the most enjoyable banquets they had ever attended. As the following full report shows, the toasts were exceptionally interesting. The setting was delightful. The Riley Room, always beautiful, was made especially so on this occasion by a profuse decoration of the national colors. Old Glory was draped over the speaker's table, and the flags of all nations were shown at various points of advantage. Reverend Philip O. Frick said grace, which was followed by "America," led by Chaplain Huston, who afterwards sang "I Am a Nephew of My Uncle Sam" and other patriotic songs of his own composition. The Claypool Orchestra discoursed excellent music and Miss Hazel Collins, assisted by the Hoosier Trio, sang a number of popular songs. Of course, everybody joined in the singing of the Hoosier lyric, "On the Banks of the Wabash." The musical features alone made the evening memorable.

AMERICA'S SUCCESS IN WAR AND INDUSTRY.

As a consumer YOU are a shareholder in the industrial system of the United States.

Every dollar spent for anything YOU need goes into the General Stock Company of American Industry and pays back in dividends of wages and profits.

Do your bit for Democracy by co-operating with the business men of your community. It will keep production costs down and save YOU money by doing away with industrial war.

—National Industrial Conservation Movement.

Each guest found at his or her plate a valentine, it being Valentine's day, and a bit of fancy headgear, which, when donned, added an air of gayety that leavened the spirit of seriousness which characterized the speeches. Toastmaster Bookwalter, always witty and entertaining, was unusually happy in his introductory remarks, paying just tribute to our late Hoosier poet, James Whitcomb Riley, whose portrait graced the first inner page of the souvenir menu card, a copy of which will be sent to any of the members who were unable to be present, desiring same. With the exception of the guest of honor, Secretary William C. Redfield, the entertainment was distinctively Hoosier, a fact in which the local committee takes much pride. After partaking of an excellent dinner, well served, all the guests were in a happy mood and gave attentive ear to the feast of reason which followed.

The Banquet Speeches.

Secretary Randall: We have finished the preliminary, as it were, and if you will all kindly adjust yourselves, come closer to the head table, if you will, we will start on the second chapter of the evening, which I know will prove even more pleasant than the first. I want to say we are meeting in what is known as the Riley Room of the Claypool Hotel, so called since the last birthday dinner which was given to our beloved Riley some few years ago in this room. The panels near the ceiling, which are now decorated with bunches of posies, were at that time decorated with verses from Riley's poems, and since that night this room has been known as the Riley Room. I take it that no other man is quite so close to Hoosier hearts and memories as Riley, so we have made our program tonight a little souvenir of Riley, and we want you to take them home with you. We have no fear you will forget us, but it is pleasant to have a little souvenir of a pleasant evening, so this little program, which gives you the pictures of the gentlemen who will speak to you, will, we trust, be treasured as a keepsake. I am pleased to turn this gavel over to our President, who will introduce to you our good friend and neighbor, Charles A. Bookwalter, of whom I can say, at least in a political sense, he has more warm friends and more good enemies than any other man in Indianapolis.

Toastmaster Charles A. Bcokwalter, Indianapolis, Ind.

President Clippert: It is very gratifying indeed to both the officers of this organization and the local committee to have such a splendid gathering here, and while we are not here in very large numbers, we are here in the right spirit, and that spirit is to pay our respects to our dintinguished guests who grace the speaker's table this evening. I take great pleasure in introducing to you the Honorable Charles A. Bookwalter of Indianapolis, the toastmaster for the evening.

Toastmaster Bookwalter: I just do not know how to accept the introduction of myself offered by my good friend Theodore Randall. I do not feel like boasting of the friends I have, but I am proud of some of the enemies I have. Possibly many of the friends I possess are due to the same reason that the illustrious Democratic statesman described in nominating Grover Cleveland, that "they loved him for the enemies he had made." But I am not subject to discussion. We are here for a purpose, and I assure you that the main purpose is not to listen to an address from me. As Mr. Randall has said, what has previously occurred is the preliminary. Well, in the somewhat prebarbaric days, when I was mayor of Indianapolis, I used to let them go ten rounds to a decision, and once in a while when the reporters were not looking, I would slip around the edges to see something of what was going on. I am in a class in that respect with another illustrious American citizen, Theodore Roosevelt, I like to see a fellow fight, and I don't think there is any one very much averse to finding out which is the best man. My observations were that the preliminary was not the whole thing, it was the main bout we were waiting for. So I am not going to transgress on your patience because I hold you helpless, as I do at this moment, in trying to make the introduction of any of the speakers except as briefly as possible telling you something about them. The first speaker of the evening is a man of national stature, a man who occupies one of the most important positions in our government; the man in the administration in whose office we as business men are much interested. The Department of Commerce has come to be recognized as all important to the business of this country, and the business of this country is the most important thing in the life of the nation. He comes to us tonight, while possibly not as the direct representative of our President, but he comes from close contact and close association with the man who at this time directs the destinies of the American people. While we may not all agree with him in all things—in fact, there is one thing on which I radically disagree with him, his politics don't suit me at all. (Laughter and applause.) While we may disagree on things of that sort—we are all in perfect accord with him now, and his great associates in prosecuting this war to a successful conclusion. (Applause.) After we have taken care of this main task, trust us, Mr. Secretary, who are on the other side, to be forward enough to give you to understand just how you mismanaged that part of the affair. (Laughter.) But until we have whipped the Kaiser, we have just one duty to perform and that is to support the President of the United States. (Applause.) I believe our distinguished visitor can take back with him to Washington the message that Indiana is as always loyal to the nation and true to her past history. Unless I am careful I will violate the promise I made not to make a speech. I am going to stop and present to you the Honorable William C. Redfield, Secretary of the Department of Commerce in the President's Cabinet, Washington, D. C.

OUR NATION.

HON. W. C. REDFIELD, SECRETARY OF COMMERCE, WASHINGTON, D. C.

"My Country, 'tis of thee,
Sweet land of liberty."

Mr. Toastmaster, Your Excellency the Governor, Ladies and Gentlemen:

I did not know until a few moments ago how to describe in a phrase the subject on which I am to speak to you but now I know for in the old Book there is a familiar phrase which I have taken and altered for my text. It is this: "What shall it profit a nation if it shall gain the whole world and lose its own soul." On that theme I want to talk to you briefly and frankly, trying to show what the task is to which we have set our hand and how the text applies to the subject.

I met a few months ago a charming lady about whose face there was something I could not at all understand. She was not gloomy, on the contrary she was smiling, almost bright, but something was there that was strange and "different." I said to a mutual friend "What is it in the lady's face? You must see it?" She said this, "She had five sons, she has given the lives of four to France. The fifth is in the army." But France fights because her soil is invaded, and she is struggling for her own home and her own people and her dear daughters—what they have endured we shall not fully know until the war is done, but God forbid that the daughters of America shall ever suffer what the young women of France have suffered at the hands of the German soldiers.

I met a young English woman whose husband has gone out into the midst of war. She knows not whether he is dead or alive, or a prisoner. But England fights, in part at least, to keep her pledge; because she put her name to a bond that Belgium should be free and independent, and because that bond was ruthlessly broken by a nation that signed it.

I have a friend who is a Servian. I tell him that in the days that are coming, I shall go with him to his capital city of Nisch and there we shall have glad days together. But he says, "My wife and children, where are they? I have not seen them, lo, these many months. They are in the hands of the enemy."

The wives and mothers before me know that husbands and sons that are dear to them are on the other side. Our fathers and our brothers are bearing the burden and strain and risk of war. Yet our country has not been invaded, our daughters as yet have not been outraged, our homes are not destroyed. Why are we fighting beside the Englishman and the Frenchman and the Servian? What is the issue that has called us thousands of miles from home to do that thing to which every former American policy was opposed, to interfere and to spill our sons' blood and pour our treasure out on the battle fields of Europe? What is it that has led us there?

I remind you first of all that the ultimate causes of things are not those which at the beginning appear, or at least they are at the beginning often obscure. You recall that it was more than a year after we began the War of the Revolution before the Declaration of Independence was written. You remember that we had fought in the Civil War two long, weary years before the Emancipation Proclamation was written. Great causes emerge slowly out of the turmoil and conflict of battle but at last they separate themselves from the noise and confusion and we can see things as they are.

Bear with me a little while I try to give you a brief picture of certain things which have led up to the happy position in which this country stands. Happy position that our America should be a leader in a fight for a creed wholly ideal. Happy that we may give our sons and treasure for the cause of righteousness. Happy, if by making a great sacrifice, we may save the soul of our people.

You will remember it was the irony of fate that the German Empire was born and held its first official act in the great palace of the French kings at Versailles. It was, we know now, peculiarly German to take that place and that time to organize the new German government. But that, after all, was not the beginning of present things. Back of that, in 1866, Prussia had torn Schleswig from Denmark. Article V of the Treaty of Prague (August 23, 1866) in which Austria ceded Schleswig to Prussia contained these words: "The people of the North of Schleswig shall be again united with Denmark in the event of their expressing a desire so to be by a vote freely exercised." This vote was never taken. It was requested in accordance with the treaty but it was refused and on October 11, 1878 this solemn promise in the treaty was abrogated with the assent of Austria, making the first but not the last of the infamous "scraps of paper."

Ever since the Six Weeks War with Austria in 1866 in which her power was shattered by the Prussian conquerer, Austria has been subject to German dictation. Never more so than now, for today she is helpless in the hands of Germany, unwillingly let us hope, but none the less really a tool in the hands of a power stronger than she is.

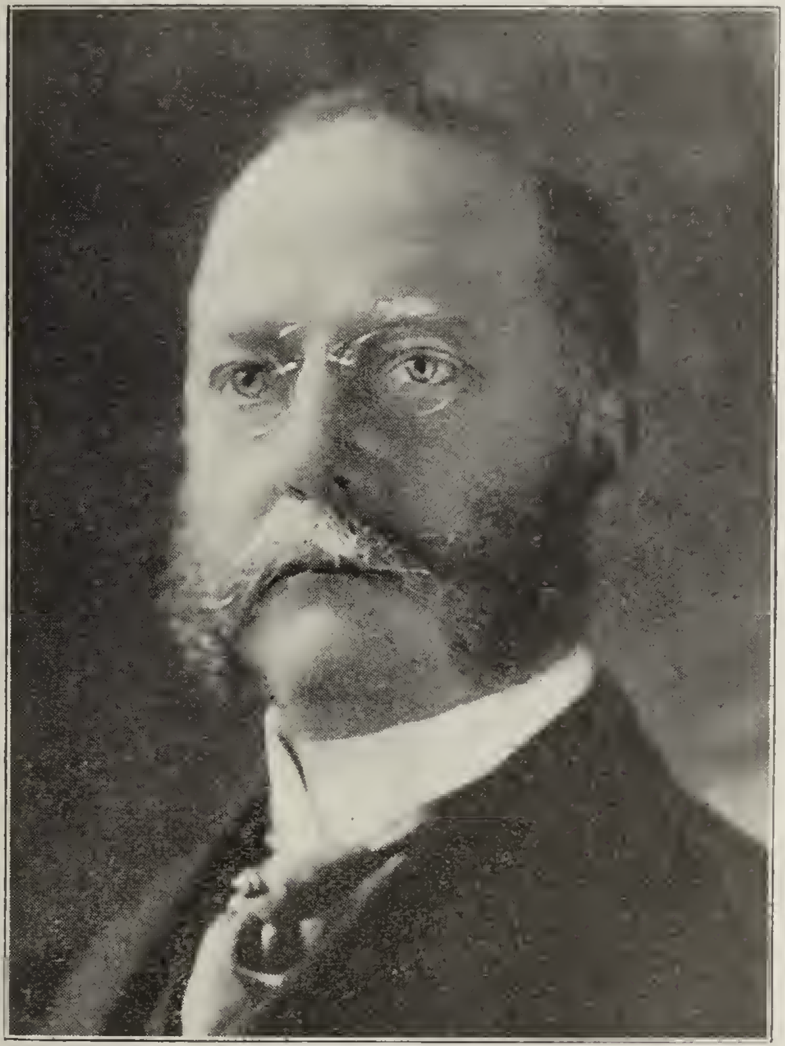
Then we remember and we know now what was surmised before—for Bismarck in his memoirs states particularly—that the war with France in 1870 was deliberately brought about in the hope that France would be utterly crushed. This they thought they had done when they had taken Paris and established the German Empire, imposing an indemnity of a thousand million dollars. They thought they had finished their work, and yet we know that the French peasantry out of their wonderful thrift took the thousand million dollars out of their old stockings and the savings which they had hidden away in their homes, and paid that thousand million dollars in gold calling upon no one else for help.

With that began the history of modern Germany which we know and understand perhaps a little better than we did. It has two phases. The first phase began when, in the year 1871 or 1872, Germany commenced that wonderful march of progress on the commercial and industrial side, from which we have very much to learn. She made science the handmaid of industry. She, in every possible way, encouraged industry and business; she developed subsidized ocean lines and promoted ship building on a large scale; she established an enormous merchant marine; to protect that she built up a huge navy; so she grew with astonishing speed into the second of the world's great exporting nations, "Made in Germany" became a menace to some and commonplace to everybody, for in almost every home in this and other lands there were articles that were "Made in Germany."

At the same time she developed her municipal governments to a wonderful degree, and applied to science to such an extent that the parks in some cities were self sustaining merely by the wood they sold. Her business houses sprung up all over the earth. I went down China's coast in 1911 and found there the great German business houses permanently established. There were no American business houses but plenty of German firms. I remember the "Scharnhorst" lying under the English guns at Hong Kong—now she has gone, thank God, to her own place at the bottom of the seas.

Such was the freedom of the seas that Germany did that. She was welcome to every port in the oceans of the world and among them to the great sea ports of the British Empire where German houses had their representatives on equal terms with the British and everyone else. That was the commercial side. Germany came very near to having gained the whole world.

But that is not the only picture. Side by side, as she grew powerful, came a change of spirit. It was first encountered years back in the old days of Frederick the Great. It found its modern embodiment in the man of blood and iron, Count Von Bismarck. This spirit was one which said to itself, "They shall take who have the power and they shall keep who can." This spirit determined that Germany should deliberately build upon its material prosperity a power which should overshadow and control the world. Little by little it appeared in her philosophy, in the teachings of her professors, in the national utterances of her statesmen, until there came into being at last the conception which we call the Pan-Germanic idea, the spectacle of a German state with its forehead bathed in the North Sea, its hands in the Mediterranean, and its feet resting securely in the Indian Ocean. Germany in the north guiding Austria-Hungary, the Balkan States and Turkey at her will; controlling a path across two continents. It was with this plan in mind that she got control of the Bagdad railway and almost had it completed. Very nearly has the Pan-Germanic dream become a fact, a serious reality.



Hon. William C. Redfield, Secretary Department of Commerce, Washington, D. C.

Before long this dream of political power under autocratic control reaching half way across the earth and dominating the civilized nations of the earth appeared as definite policy. Along with it came a philosophy, so hideous, so selfish, so conceited, so absolutely evil from our viewpoint that it needs only to be stated to us to raise a mocking laugh, and yet this same hideous philosophy is soberly exploited by the entire German people, preached deliberately by all her intellectual teachers and backed up by 12,000,000 bayonets, by an army and navy that for forty continuous years were kept in constant steady preparation for the day to come.

I wonder if you really know what Germany meant by readiness. For example when the hour of mobilization struck, each soldier in Germany going to the barracks found his canteen waiting for him filled that day with fresh water, as it had been filled every morning for many long years. Such was the preparedness with which Germany entered this war.

In the statements which follow you will find what leading men of Germany have been thinking and saying in recent years. We have paid in this country little heed to what have seemed to us the idle vaporings of a war lord or his disciples, yet it now becomes important to note that as far back as July 3, 1900 in an address at Kiel the Kaiser said:

"Germany's greatness makes it impossible for her to do without the ocean, but the ocean also proves that even in the distance, and *on its farther side, without Germany and the German Emperor no great decision dare henceforth be taken.*"

It is interesting to connect up with this the statement that "In a hundred years the American people will be conquered by the victorious German spirit, so that it will present an enormous German Empire. Whoever does not believe this lacks confidence in the strength of the German spirit." It is true that a German newspaper thought the author of the above rather optimistic and the suggestion is made in the same paper at a different date that "The most dangerous foe of Germany in this generation will prove to be the United States." The author of this last statement spoke of commercial war but to him political war was a natural sequel of the commercial contest.

It was, however, an officer in the service of the German general staff who in 1901 wrote:

"If the German invading force were equipped and ready for transporation the moment the battle fleet is despatched, under average conditions, these corps can begin operations on American soil within at least four weeks. * * * * The United States at this time (1901) is not in a position to oppose our troops with an army of equal rank."

The author proceeds:

"It (the invasion) should be so managed that a line of land operations would be in close juncture with the fleet, through which we would be in a position to seize in a short time many of these important and rich cities, to interrupt their means of supply, disorganize all governmental affairs, assume control of all useful buildings, confiscate all war and transport supplies, and lastly, to impose heavy indemnities. * * * * As a matter of fact, Germany is the only great power which is in a position to conquer the United States."

Let us remember Serbia and let us recall Belgium for a moment because they have been guilty of the worst of crimes in German eyes—the crime spoken of as "disastrous and despicable"—namely that of being relatively weak and small states, for Treitschke says:

"It is necessary, then, to choose between public and private morality, and, since the State is power, its duties must rank differently from those of the individual. Many which are incumbent upon him have no claim upon it. The injunction to assert itself remains always absolute. Weakness must always be condemned as the most disastrous and despicable of crimes, the unforgiving sin of politics."

This in German thought is clearly so because Nietzsche teaches plainty that:

"Life is essentially appropriation, injury, conquest of the strange and weak, suppression, severity, obtrusion of its own forms, incorporation at the least, and in its mildest form exploitation."

How far this villainous doctrine has gone may be gathered from the fact that these words are taken from a German pastor, a teacher of the religion of the gentle Christ:

"Whoever cannot prevail upon himself to approve from the bottom of his heart the sinking of the Lusitania, whoever cannot conquer his sense of the gigantic cruelty to unnumbered perfectly innocent victims * * * * and give himself up to honest delight at this victorious exploit of German defensive power—him we judge to be no true German."

And again I read from Nietzsche:

"Ye shall love peace as a means to new wars, and the short peace better than the long. I do not advise you to work, but to fight. I do not advise you to compromise and make peace, but to conquer. * * * * Let your labor be fighting and your peace victory. You say that a good cause hallows even war. I tell you that a good war hallows every cause."

Again I put before you the words of a man, himself of German blood but living in America and for twenty-five years going back and forth between the two countries. He says:

"I speak as one who has seen the spirit of the Prussian governing class at work from close by, having at its disposal and using to the full practically every agency for moulding the public mind.

"I have watched it proceed with relentless persistency and profound cunning to install into the nation the demoniacal obsession of power-worship and world-dominion, to modify and prevert the mentality—indeed the very fibre and moral substance—of the German people, a people which until misled, corrupted and systematically poisoned by the Prussian ruling caste, was and deserved to be an honored, valued and welcome member of the family of nations. * * * *

"From each successive visit to Germany for twenty-five years I came away more appalled by the sinister transmutation Prussianism had wrought amongst the people and by the portentous menace I recognized in it for the entire world.

"It had given to Germany unparalleled prosperity, beneficient and advanced social legislation, and not a few other things of value, but it had taken in payment the soul of the race. It had made a 'devil's bargain'."

It is hard for us to realize that these things are true. Take for example the letter, which I am sure many of you have seen, of the little German school girl written to her friend in Switzerland. The girl was but sixteen years of age. Listen to what she wrote and imagine if you can any American girl writing such a letter:

"There is but one race worthy of ruling the world. That race is ours, the Prussians. All other nations are degenerate and of inferior worth. Yesterday our pastor explained to us that Adam and Eve were Prussians. That is quite easy to understand, because the Bible tells us that the German God created us all after His own image. We are the divine fruit and the others are only weeds. That is why our great Emperor has decided to extirpate the weeds."

We hear such language almost with a smile but the smile turns to horror when we learn that whatever the child wrote or failed to write the words speak the truth which is verily believed by the German people for Lehmann writes:

"It is no foolish overvaluation of ourselves, no aggressive arrogance, no want of humility, when we more and more let Bismarck's faith prevail within us, that God has taken the German nation under His special care. * * * * Germany is the center of God's plans for the world. * * * * All the deep things, courage, patriotism, faithfulness, moral purity, conscience, the sense of duty, activity on a moral basis, inward riches, intellect, industry and so forth—no other nation possesses all these things in such high perfection as we do."

And Professor Sombart adds:

"Frederich Nietzsche was but the last of the singers and seers who, coming from the height of heaven, brought to us the tidings that there should be born from us the Son of God, whom in his language he called the Superman."

The little pamphlet which I hold in my hand was written by Mr. F. C. Walcott, with whom I had the pleasure of dining a few nights ago. He is a business man working in connection with the Food Administration and opens his short story by saying:

"This I have seen. I could not believe it unless I had seen it through and through. For several weeks I lived with it; I went all about it and back of it; inside and out of it was shown to me—until finally I came to realize that the incredible was true. It is monstrous, it is unthinkable, but it exists. It is the Prussian system."

He speaks in a few words of the starving people of Poland and gives a vivid picture of the things he saw. He says:

"Wicker baskets were scattered along the way—the basket in which the baby swings from the rafter in every peasant home. Every mile there were scores of them, each one telling a death. I started to count, but after a little I had to give it up, there were so many."

He adds:

"In Warsaw * * * * one of the most prosperous cities of Europe before the war, the streets were lined with people in the pangs of starvation. Famished and rain-soaked, they squatted there, too feeble to lift a hand for a bit of money or a morsel of bread * * * * perishing of hunger and cold."

Under these conditions Mr. Walcott questioned the German commander, General Von Kries and thus reports what the soldier said:

"'Starvation is here,' said General Von Kries. 'Candidly, we would like to see it relieved; we fear our soldiers may be unfavorably affected by the things that they see. But since it is here, starvation must serve our purpose. So we set it to work for Germany. By starvation we can accomplish in two or three years in East Poland more than we have in West Poland, which is East

ANNUAL BANQUET OF THE NATIONAL BRICK MANUFACTURERS ASSOCIATION, INDIANAPOLIS, FEBRUARY 14, 1918, PHOTOGRAPHED BEFORE THE ARRIVAL OF ALL THE GUESTS.

Prussia, in the last hundred years. With that in view, we propose to turn this force to our advantage.'

"'This country is meant for Germany,' continued the keeper of starving Poland. 'It is a rich alluvial country which Germany has needed for some generations. We propose to remove the able-bodied working Poles from this country. It leaves it open for the inflow of German working people as fast as we can spare them. They will occupy it and work it.'

"Then with a cunning smile, 'Can't you see how it works out? By and by we shall give back freedom to Poland. When that happens Poland will appear automatically as a German province'."

Can you conceive of an American General deliberately turning starvation to such a purpose? What would you do to an American officer who said calmly "Starvation is here. We purpose to use it to our advantage"?

Neither such doctrines or such behavior are justified by any religious teaching. It is impossible for you and for me to understand how people who claim not only to be civilized but even to have superior culture and an especially close touch with a national God can preach such hideous doctrines and act with such hideous cruelty.

Do we not, therefore, truely say that we are engaged in a struggle far more righteous even than that of England to keep her pledge, far more vital even than that of France to recover her territory, far more important than the effort of Belgium or of Serbia to get back the lands and the homes that have been taken from them? These nations all do well, as do those associated with them in the common strife, but we have found a great spiritual ideal for which to sacrifice and for which to conquer—something as far above all mere political ideals as God is above man himself. We wrestle with a spiritual evil in high places. We fight not only "to make the world safe for democracy" but in a far better sense to have it a Christian democracy.

So now we see a little of the great cause that is emerging from out the mists and vapors "amid these earthly damps." Perhaps as time goes on we shall also be able to see what the poetess called "The Glory of the coming of the Lord, He has bared the fateful lightening of His terrible swift sword."

Perhaps we shall realize that we give our sons and our treasures for something greater than we thought—for patriotism indeed, but for patriotism which stands for righteousness—a cause far above all local and personal and even national patriotic purposes. We shall come to understand that it is only a great, free people that can give themselves freely to fight for a holy ideal. Perhaps we shall see that we must give our children and our treasure to a holy war and that the struggle in which we are now engaged is not merely a struggle between nations or a struggle between armies or a matter of boundaries, or territory, or indemnity, but rather the old, fearful strife of Christian against Apollyon, of Christ against the Devil.

I would have you bear witness with me that "by their fruits, ye shall know them" is as sound today as when it was first spoken. I cannot tell you here, I could not tell to the most stoical man the things wrought in cruel deeds out of this hideous Germany philosophy. By what they have done shall they be judged, but the story, though true, is almost beyond belief. The savages in the ranks, led by the men of "kultur" who believe the savage philosophy that starvation is not to be alleviated but to be utilized, have done in Belgium and in northern France what has there been seen and heard and what is but the outward and visible sign of natural and spiritual evil working its normal result.

So, your Excellency, the Governor, Mr. Toastmaster, Ladies and Gentlemen, what we are summoned here to consider is something far finer, far greater, far holier than we knew. Our children, if they go, go to battle as they who sought the Holy Grail. To them we may truly say "If thou fall'st, thou fall'st a blessed martyr."

The dollars we earn and save and give are given into the treasury of the Lord God of Righteousness. America stands in the world today for God beside all the English speaking peoples and with them side by side the Mohammedan, the Hindoo, the Buddhist, with Christians of all kinds of creeds, with men of every faith and of no faith, standing together in this great struggle because the common conscience of mankind has revolted against wrong. (Prolonged Applause.)

Toastmaster Bookwalter: Lying between the Great Lakes on the north, the Ohio River on the south, the western line of the commonwealth of Ohio on the east, and the eastern line of the commonwealth of Illinois on the west, is God's country. (Applause.) Its name on the map is Indiana. Without invidious comparison, the greatest state in the Union. We write all the modern literature that is worth reading. We sing all the songs of poetry that are worth remembering. We produced the greatest character in modern literature—Ben Hur. Alice of Old Vincennes was born here. Knighthood flowered in Indiana. Riley sung on Hoosier soil. George Ade made the whole world laugh, wherever was to be found the American sense of humor. So, of course, there is only one state in the whole cluster. It is Indiana. Over here in the center of the state of Indiana is the finest Soldiers' Monument in America; yes, in the world. On its south face we read that this little piece of real estate whose boundaries I have given, sent to the Civil War 247,000 men. These men were marshalled under the matchless patriotic leadership of Oliver P. Morton. (Applause.)

In this present war, which has come upon us, Indiana has been true to her past record. Her sons volunteered; permit me to say I have no criticism whatever of the men in the National Army because in the wise providence of the law, the man who responds to the call of his country when his time comes in accordance with the provisions of the law stands four square in my estimation with the volunteer. He is not a conscript, he is not a drafted man, as we used the term in the Civil War. He is a volunteer under the laws of his country, and he performs a patriotic service the same as any other man in the service. But the sons of Indiana did not know that a national law was to come, so they sprang to the response of their country as volunteers. We filled our quota and it overflowed. And now in the work incident to the prosecution of the war under the leadership of our Governor, who I believe is as sure of his place on the pages of history as Oliver P. Morton, when future history comes to be written. Under the leadership of another Governor, Indiana has taken a front position in the assistance rendered to the President and to our national government. This proposition would not be complete without having a representative of the commonwealth. We have with us, and we are proud of him, James P. Goodrich, Governor of Indiana. (Applause.)

Hon. James P. Goodrich, Governor of Indiana.

OUR STATE.

HON. JAMES P. GOODRICH, GOVERNOR OF INDIANA.

"The winds of heaven never fanned
The encircling sunlight never spanned
The borders of a fairer land
Than our own Indiana."

Mr. Toastmaster, Ladies and Gentlemen:

I find myself, following Mr. Bookwalter's introduction, in a rather embarrassing situation, as he has made the speech I had intended making on the subject of Indiana. I find myself in the position of the farmer who was driving to town with a wagon load of potatoes. The end gate of the wagon fell out and the potatoes rolled out on the road. By and by, he got stuck in a mud hole. Thinking he would unload his potatoes and so lighten his load and pull out of the mud, he turned around discovering that the

ANNUAL BANQUET OF THE NATIONAL BRICK MANUFACTURERS ASSOCIATION, INDIANAPOLIS, FEBRUARY 14, 1918, SHOWING THE FANCIFUL HEADGEAR DONNED FOR THE OCCASION.

wagon was empty, said "Stuck, by thunder, and nothing to unload." (Laughter).

But this is a great subject, "Our Own Indiana." Modesty forbids me here to extoll her virtues and tell of her many excellencies. We admit them all and concede the truth of every good thing that has been said about our State, for

"The winds of heaven never fanned,
The encircling sunlight never spanned
The borders of a fairer land
Than good old Indiana.

"Our gentle mothers pure and good,
In stately home or cabins rude,
Are types of purest womanhood.
In good old Indiana.

"Our girls are sweet and canny,
Our sons the bravest of the brave
Own no man master, no man slave,
In the heritage God gave,
Our own Indiana."

(Applause).

We love the very name itself. It speaks of the days of trial and hardship, when our forefathers crossed the mountains, and founded here a great commonwealth. Its history is full of heroic sacrifices, from the day the French fathers came into the wilderness to convert the Indian and add this great middle west to the territory of the grand monarque.

In the days gone by, in every great crisis in the country's history Indiana has been noted for her loyalty to her country's cause. The blood of the men of '76, who founded the Republic, and of those men of '61 to '65 who saved and preserved the nation, runs through the veins of the men of Indiana today.

Chaplain Frank C. Houston, Indianapolis, Ind.

I could tell you tonight much of the material progress of our State, and tell you how from the land that was a wilderness a hundred years ago, there is now produced each year more than one billion dollars worth of food products; that out of her factories is produced more than four billion dollars worth of manufactured products that are sent to the four corners of the globe; that she is sixth in the production of clay products and fourth in the production of coal among the different states. I could tell you much of her authors, and her men of letters; of her influence in the field of education, and things of that sort. I could put in a whole evening in extolling the virtues of our state and of her great accomplishments in amassing material wealth.

But, my friends, the true value of a state and nation must be weighed in scales more delicate than the balances of trade; the true value of a people is measured not by the amount of gold mined, not by the bushels of corn produced, nor by the balance of trade, but the amount it has contributed to the moral uplift and the spiritual ideals of the race.

As Secretary Redfield has told you, we are fighting for an ideal that is as different from that of the German people as night is different from day. The question that must appeal to every Hoosier tonight is, will the people of Indiana measure up to the ideals held by those who founded this government of ours, and those who preserved it in the dark days of '61 to '65? I think if we can judge the Indiana of today by things accomplished up to this hour we will find that the men of Indiana today are the worthy sons of the Indiana of the days gone by.

The civilization of the world is founded on ideals. "Exalteth." The patriotic ideals that we hold will do as much to win the war as the physical forces we bring to bear, for the things of the spirit are always stronger and more enduring than material things.

I am glad to say to you tonight and to our distinguished visitor who comes from Washington, that Indiana will ring true to the record of Indiana in the days gone by. I think I can say in addition to what Mr. Bookwalter has said and without transgressing the truth, that not only in the men she has sent enlisted, but in the material preparation behind the line, Indiana stands easily foremost among the states in meeting demands that has come to us from the National Government, and that shall be our record until the last battle flag is furled and this war brought to a victorious conclusion. We would not be worthy of Indiana and of the past if we did less than this. We would not be the sons of our fathers if we failed to measure up to the duties of the hour. Each generation must answer the question, are we worthy of the past? Are we measuring up to the responsibilities of the hour? The future of the State and the Nation will be determined by our answer to that question. We will not be judged by our progress in material things, but by the manner in which we measure up to the ideals that have been transmitted to us from the past. We are happy to say that the ideals that have come down to us are not those so forcefully pictured by the first speaker of the evening, that "might makes right;" that war is justified by the things that come out of war; that one nation has the right if it desires the territory of another to take that territory by force. That is the ideal of the savage, not the ideal of a civilized nation of this day.

I think it was after Sulyman the magnificent had conquered about all of Western Asia and planted the star and crescent on the European side of the Bosporous, that he sent for his secretary, and said "I want you to write for me the Annals of the Ottoman Empire." The secretary went his way, and in a few weeks the Sultan sent for him and asked him what progress he had made. He said, "Sire, I have gotten as far as the title." "What is the title?" asked the Sultan. "The title, Sire," replied the secretary is "Decline and Fall of the Ottoman Empire." "What do you mean?" said the Sultan. "I mean, Sire, that your fathers and my fathers called themselves the earners of empires. You and I of this day and generation call ourselves the heirs of empires. It requires, Sire, the patriotism, courage and self-sacrifice and devotion to high ideals of the earners of empires, if this great nation of ours is to endure."

The question that comes to the men of Indiana and of the Nation today, is, "Are we simply the heirs of empires, or are we earners of empires?" My conviction is that when future historians come to record the annals of this period in our national life, he will write that the men of Indiana and of the Nation were more than heirs of empires, but had that courage, patriotism and devotion to high ideals held by their fathers transmitted this country of ours to their children and their children's children, better and purer and nobler, because we of this day and generation have here lived and wrought.

We of this day and generation have a right to be proud of the part Indiana has played in every crisis in the United States history and of the part she is playing today.

INDIANA.

God bless old Indiana!
The child of the pioneers,
In the solitude of swamp and wood
They builded for future years.
Braving the dangers of trackless wilds,
Patient to work and wait,
Until the clearing around their cabins
Merged into a mighty State.

God bless old Indiana!
Her's are no cities great,
Where crime and poverty cast a shadow
Of suffering turned into hate;
But her's is the land of the open sky,
And the open heart and hand
Where God's own sunshine, unhindered
Falls on another Promised Land.

God bless old Indiana!
Wherever the flag has gone,
'Mid the roaring hell of shot and shell,
Her brave boys have followed on.
She has yielded her blood and treasures
And whatever the sacrifice,
Needful to prove her devotion,
She has willingly paid the price.

God bless old Indiana!
And keep her a happy state,
And give to her sons of the years to come
A courage that made her great.
Deep and serene as her forests,
Strong as her mighty trees,
Such were the old time Hoosiers,
Oh, God! give us men like these.
(Loud Applause).

Toastmaster Bookwalter: Indiana has produced many noted men. She has produced great statesmen, and Indianapolis has produced the greatest, I think, of them all. We sent a President to Washington from Indianapolis, and when he came back his neighbors tendered him a reception that has become historical because of one saying of his. Quoting the words of Apostle Paul (I am going to show you I have some familiarity with this Book that these other gentlemen have quoted from—and I did not leave the room a moment ago to look at the Book either). (Laughter.) Quoting from the Apostle Paul, General Harrison in the conclusion of his speech declared, "I am myself a citizen of no mean city." I thought that was worthy of preservation other than on the pages of a book, so I had it cut on the cornerstone of the City Hall, where we see it every day and are reminded of the fact that we are citizens of "no mean city."

Well, Indianapolis has produced other great men in public life. I was mayor of the town myself at one time. (Laughter.) But circumstances over which I had no control stopped me in my mad career. (Laughter.)

We tonight are honored by the presence of the mayor of this "no mean city." He has started out on his primrose path of pleasure. Everybody is applauding; if history is to be depended upon to repeat itself, he will listen to another song before the termination of his four years, but just at the present, a rainbow shines in the East. He is wondering, as has every other man who has ever been elected to public office, how to take the assurance that every individual he meets is responsible for his election, and that nobody voted for the other fellow. I used to wonder where the other man got his votes, because everybody that came to me for anything prefaced his request with the assurance that he was the only label-blown-into-the-bottle, simon-pure creator of myself as a public official. So our guest of the evening, if he will be frank with you, will tell you that I have diagnosed his present situation rather closely. I take great pleasure in presenting to this audience the Honorable Charles W. Jewett, Mayor of Indianapolis. (Applause.)

OUR CITY.

HON. CHARLES W. JEWETT, MAYOR OF INDIANAPOLIS.

"I am myself a citizen of no mean city."

Mr. Toastmaster, Ladies and Gentlemen:

Mr. Bookwalter has diagnosed my case far more accurately than he conceived. Mr. Bookwalter, you probably do not know that I appeared before this convention the other day in an address of welcome, and that it was just preceding the theater party which was held at the Circle, so that the vision of that "other scene" and a realization of what was missing may burst forth any moment.

If Governor Goodrich is himself stuck with "nothing to unload," certainly you can see that I find myself without even a wagon from which to unhitch. (Laughter). I am sure if you brickmakers had been furnishing the ammunition for the Irish soldiers at the battle of The Marne, that battle would have been more decisive than it was, and that reminds me of a little story of the Irishman at the battle of The Marne. He was captured by the Germans and taken into prison, where he came in contact every day with a German captain. This particular Irishman persisted in reminding the German captain each morning that the Irish gave the Germans an awful fight at the battle of The Marne. Each morning he would say: "You will have to admit that the Irish gave you Germans hell at The Marne." Finally the German officer had his patience exhausted, and he ordered one of the guards to take the Irishman out and make him swear allegiance to the German kaiser, forget his Irish citizenship, and become a German subject, under penalty of death. So they took him out and made him take the oath. He reasoned that it was better to be a German subject than a dead Irishman, so he took the oath of allegiance. The next morning, he came to the captain, and he said: "Now, I am a full-fledged German subject, am I?" The captain said: "You are." "I am a German subject?" "You are." "Well, I just wanted to say to you, didn't them damn Irish give us Germans hell at the battle of The Marne?" (Laughter).

After having listened to the very inspiring message of Secretary Redfield, and the patriotic sentiments of Governor Goodrich, it seems to me that a fitting climax would have been to have called on Dr. Frick for a benediction and departed.

Our city is indeed honored today to have with us the distinguished Secretary of Commerce, and to have also the manufacturers of the products that have largely contributed to making Indianapolis what we think the most beautiful city of America. A little while ago and we did not comprehend the magnitude of your industry, but today we are beginning to realize, after what has happened in the way of destruction in the old world, what it means to be producers of the building materials of the world. Your craft has created the magnificent structures that have been worked out through architecture and art and science throughout the whole world. And so I say our city is distinguished and honored to have with us here upon this occasion our two distinguished guests—your convention and the representative of our federal government.

The very fundamental thing that we are all interested in is the message that has been brought to us from Washington tonight, and from Indiana by our Governor. I know that, permeating your convention in the transaction of your business, in exchanging ideas, the fundamental thing has been, not that you make money, and certain kinds of materials in your lines, but in conformity with the great sermon Secretary Redfield has delivered here tonight, we may be striving to make the world and America safe. That is a big ideal and I am only going to take your time to re-emphasize some of the things that have been said. In this great crisis that is confronting us, every unit of government must be prepared to make safe our ideals and our democracy. The federal government is exercising every plan for efficient preparation that a successful and final termination of the great conflict may be brought about. Every city, every organization, every industry and every individual should make each plan successful by giving that same degree of patriotic loyalty and devotion to the cause for which our nation stands.

Hon. Charles W. Jewett, Mayor, Indianapolis.

We know, in the 141 years of our nation's history, we have been making our national life more complex. It has not been long since we numbered our large cities that had a population of over 8,000 inhabitants in only two figures, and today we determine the population of our great municipalities by the hundreds of thousands and the millions. It is in the cities that we find the great complex governmental problems. The problems of government in all units and branches are becoming very complex. But with it all, selfishness is disappearing, differences being eliminated, prejudices set aside and all classes and kinds of citizenship giving full response through local government to the national cause. So our city and the cities from which you come are trying to the utmost to uphold the hands of the Governors of the States and the hands of the President. Every individual is asked to be prepared; our municipalities are being asked to do the same thing. It is our one ideal and our one thought that, during this crisis, this great city of ours, which is "no mean city," shall find its full expression in service, in real sacrifice and in devotion to the great cause of the nation.

My friends, tonight we have in France, in "No Man's Land," a noble band of young Americans, representing the very best and finest blood of this country. In the Rainbow Division, a large number of our Indiana boys are on the firing line. We are proud of these boys. We have only learned a few days ago that one of the boys of this city has fallen on the battlefield, and we are proud of him and his associates. We, as individuals and organizations, have a covenant with these boys who form the fore front line of America. Our obligation to them is to be real soldiers behind the lines, that their work in the line may be effective and certain. We recognize the responsibility which rests upon us all. Let us go about our task with the spirit of devotion and sacrifice which characterized the patriotic service of the men who established our government and have since maintained it, and victory certainly will crown the American cause. (Loud Applause).

Toastmaster Bookwalter: The distinguished Secretary of Commerce has brought the national message; the Governor has spoken for the state; the Mayor for the city, and I have tried to exercise extreme modesty in my remarks relative to our city and state. You have been patient, long suffering. You have listened to our story. Now, we are ready to listen to yours, so I am going to introduce on your behalf to speak on the subject of "Our Association," Mr. W. D. Richardson of Columbus, O., an ex-president of this Association. (Applause.)

"OUR ASSOCIATION."

W. D. RICHARDSON, COLUMBUS, OHIO.

"For we, which now behold these present days,
Have eyes to wonder, but lack tongues to praise."

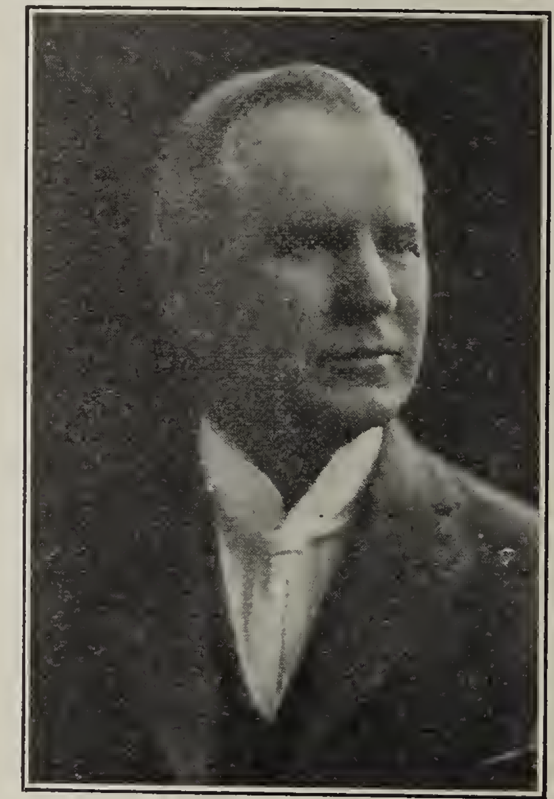
Mr. Toastmaster, Ladies and Gentlemen:

When I registered at headquarters here on Monday, I was asked if I would want a banquet ticket, I told the Assistant Secretary that I had given up attending banquets because I could not hear well enough. She promised if I would come, she would give me a seat where I could hear, but I did not take the ticket. However, it came about that I had to get a ticket and come here to hear myself talk, if I could not hear anybody else. I am pleased to say that I have been able to hear most all of the speeches tonight and I have enjoyed every minute of it—up to the present.

Yesterday afternoon I went down to headquarters again, and I was shown a typewritten copy of this program upon which my name had been placed without my being consulted, and was told that the man who had been slated to respond to the toast "Our Association," had to leave for home today. I will have to explain how such things sometimes happen. A number of years ago—just how many it is "interesting not to state" as Jane Carlyle used to say, Secretary Randall started his practice of commanding my services in an emergency and I unconsciously fell into the habit of submitting myself for the sacrifice. Nevertheless, I feel tonight, much like the little girl whose mother told her if she did not behave she would lock her in the chicken house. The little girl said, "Well, you may lock me up in the chicken house, if you want to, but I tell you now, I won't lay any eggs." I have come here at his bidding, but I feel like saying "I'll not make any speech."

I spent my boyhood days in a small town in central New York, twenty miles from a railroad. There was a Baptist and a Methodist church there; the Methodist church was a little the stronger church, and most of my boy friends went there to Sunday school and of course I went too, and a little later I also went to the regular services and occasionally to the weekly prayer meeting, which the good old deacon used always to announce would take place "in the vestry of the church at early candle light." As I recollect it, the chief reason we boys went to that prayer meeting was to see a certain girl home after the meeting—and I can't forget how unnecessarily long it seemed to me were some of the prayers. I am making this statement to explain a little story I want to tell you about a similar church in a small town, where the Methodist pastor occupied the pulpit in two adjoining towns, and in the town in which he did not live, the prayer meeting was conducted by one of the deacons. One week this deacon had to be away over prayer meeting night, and he said to his son, "Now John, I will not be here Thursday night and I want you to take my place in leading the prayer meeting." "Oh, father," said John, "I cannot do that." "Oh, yes you can," said his father. "Oh, but I can't." "Oh, yes you can. All you have to do is open the meeting and get them started." "Oh, I could get them started all right," said John, "but father, how would I ever stop them."

Now Mr. Randall knew that this subject, "Our Association," is one upon which I like to talk, but I fear he did not consider how he would stop me when I got started on it. I do not know that this subject has been a very frequent topic at these annual dinners, but I think it is a very appropriate one for every dinner. Whether there was a special reason for this subject to come up at this dinner, I do not know. I have been thinking that we have been having some pretty severe criticism of our Association recently from a certain quarter and it has been questioned whether the National Brick Manufacturers' Association had not outlived its usefulness and whether there was any more good it could do, and it was advocated in certain quarters that it would be better to give way to another association that would do something. Now, this evidently comes from a misconception of what the objects of this Association are. This is not a trade organization in the usual sense; it is not a commercial organization. It is an organization of manufacturers for educational and social purposes. And these same people have been pointing to our subsidiary organizations, the National Paving Brick Manufacturers' Association and the American Face Brick Association and what they have accomplished, forgetting that they are trade organizations, pure and simple and do not take up manufacturing problems at all. It is their function to arrange a code of ethics for selling their brick and preventing unfair competition, to give publicity to their products, and all that sort of thing, which do not come within the province of this Association. We have done and are doing something along the line of publicity, but of course not what these people think ought to be done. These critics seem to think we are not doing anything, and have not done anything. Now some of you gentlemen, and ladies too, perhaps, attended the first session yesterday and heard the testimony of Mr. Sibley of Alabama and Mr. Eisenhart, of New York, as to what this Association had done for them. We know, those of us who have been with this organization for so long, hundreds of men who could make statements like that. Yet, these critics say we are not accomplishing anything!



Willard D. Richardson, Ex-President of the N. B. M. A., Columbus, Ohio.

This Association, I can say for myself, as I look back over my career as a brickmaker, has been of great benefit to me in many ways. Some of my dearest friends in the business world are those whose acquaintance I have formed at these meetings, and I have come to look upon the annual week spent at our conventions as the most pleasant week in the year. Ladies and gentlemen, I love this Association. When I read such unjust criticisms of our Association, it makes me as indignant as the darkey I heard of down in Knoxville, Tenn. A respectable law-abiding old citizen of African descent, was going past the jail one day, and there was a good-for-nothing darkey looking through the bars, and it made him indignant to see one of his own race in jail, and without any more shame than to let people see him in jail. The young fellow called to him, but he would not look at him. The fellow looking through the bars called again, "What time is it?" The old fellow stopped and looked at him, and said, "Say, nigger, what for you want to know what time it is? You ain't gwine nowhar." (Laughter). I feel like saying to these people who are always looking for an opportunity to find fault, "You are not accomplishing anything. You are not going anywhere." (Applause). It was a shrewd Yankee who divided the world into two classes of people, those who do things, and the other class who stand by and just naturally wonder why in thunder they can't do 'em differently.

We consider it one of the greatest achievements of the N. B. M. A. that it has been instrumental in forming such strong and excellent organizations as the American Ceramic Society, the National Paving Brick Manufacturers' Association and the American Face Brick Association, to say nothing of the many local organizations of brick manufacturers that owe their existence to the activities of our members. If the N. B. M. A. had done nothing else, this alone should justify its existence and merit the gratitude of the clayworkers of America. We are proud of our children!

Now we realize that from the nature of our organization it has many imperfections and limitations and I believe I voice the sentiments of our membership when I say to those outsiders who want something different, who want to accomplish more, "come in and help make the N. B. M. A. better, make it conform to your ideals if you can."

"Whether you are a brick manufacturer, a brick machinery manufacturer, a dryer man or a kiln man or a man who is employed in writing editorials for one of our trade papers, we welcome you. This is a democratic organization and your voices will all count. We shall be glad if you can do more than we have been able to do. You will have the benefit of our experience and the advantage, maybe, of superior education and technical training and your new blood and enthusiasm can accomplish much intelligently directed in our organization, but when employed merely in tearing down and not in building up, your efforts only create antagonism and lead nowhere."

Rev. Philip I. Frick, Indianapolis, Ind.

I see by our program that this is our Thirty-Second Annual Convention. I must have been attending thirty-one years. It hardly seems possible. And there is another thing that has startled me in the last few days, to see on the Secretary's letter head, that among the names of our living ex-presidents, my name is getting up nearer and nearer the top of the list. That is a distinction I do not want, and here's hoping that it will be a long, long time before I attain the top, and if I do get there, that it will be a long, long, time before I go down to the bottom. (Applause).

Toastmaster Bookwalter: I confess I am somewhat at a loss for a proper phrase to find in introducing the next speaker. He is a Methodist preacher. My recollections of the Methodist preachers dates back to the earliest period in my memory. In fact such memories are very vivid. I had almost reached my majority before I found that a chicken had anything but necks. That fact was due to the further fact that father and mother were Methodists, and so far as we children were concerned, had the unfortunate and unpleasant habit of always asking the preacher in to dinner on Sunday. But since I have become a vegetarian in a large measure, per orders of Hoover, I am becoming more kindly disposed toward the cloth. I am going to take the job by the horns and plunge at it, and introduce to you the Reverend Philip I. Frick, pastor of the Meridian Street Methodist Church of Indianapolis. (Applause.)

OUR INHERITANCE.

REV. PHILIP I. FRICK, INDIANAPOLIS, IND.

"It is rather for us to be here dedicated to the great task remaining before us."

Mr. Witty Toastmaster, Distinguished Guests, Ladies and Gentlemen:

I have always had a high opinion of the brick. My estimation of it has increased since I have had the pleasure of looking into the faces of the members of this organization, whose business it is to manufacture the brick. I feel like propounding the conundrum, "When is a brick not a brick?" Answer: "When it is a gold brick." I rather imagine from what I can see this evening that none of you are gold brick dealers.

I am happy to say at this late hour just a few words regarding those things of national importance which have brought us together tonight. Nobody could speak upon the subject of "Our Inheritance" without thinking first of all of those material blessings which breathe fundamentals of our national greatness. For no nation can in these days of wonderful expansion be really great unless it has at its command those basic resources that make for wealth and power. How grateful then we ought to be for our unlimited blessings of material wealth; for the uncounted riches that come from prairies and valleys and mountains and lakes and rivers, until from the material viewpoint, we are the strongest nation of all the centuries. To develop and utilize them for highest purpose is indeed a sublime privilege.

But as Americans, we are grateful for more than these material riches. What makes America what she is is not her wealth, but her spirit. And America's spirit is but the glorious resultant of exalted and worthy ideals. No person has properly evaluated our inheritance until he properly appreciates those great hopes, those holy aspirations, those sublime determinations, that have combined to make what we proudly call our American spirit. And after all, this is what constitutes a real Republic. If we have reason to be grateful for the wealth and power which God has entrusted to our keeping, we have a vastly greater reason to be thankful for the ideals and beliefs and principles, over which in the Providence of God we have been appointed custodians. This inheritance we joyfully acknowledge, and to be true to our responsibility as a Democracy during these tragic and sublime days ought to be our holy ambition. Well enough to be understood that if the rulership by the people fail here in our freedom-loving America, it must eventually fail everywhere, and that in no uncertain sense the welfare of the world depends upon making triumphant now the principles that have been the power and glory of America. We must inevitably lose our inheritance unless we, by all necessary loyalty and heroism and self-sacrifice, help to make it dominant everywhere.

Nobody doubts that Democracy is now in its supreme test. We have wondered what the spirit of Democracy would be when America had the chance to develop its resources and its ideals. Will Democracy be efficient enough and self-sacrificing enough to stand against the powers and the intrigues and the arrogance and the ruthlessness of autocracy? Our only salvation is in the creation of such a spirit in America that we can prove ourselves superior to Prussianism, however well organized it may be. Our strength must be in our loyalty to our inherited principles. America will be safe, and Democracy will be safe, only as we are able to make America, educated in mind and heart, disciplined in loyalty and self sacrifice, and willing to pay any price for the victory of those principles which are the very soul of freedom.

We Americans knew that sooner or later there must be a contest to the bitter end between Democracy and Autocracy. Impossible it is that in the same world the two could exist side by side since they are in such utter contradiction to each other. Some day the world had to face the stupendous question as to whether it believed in the divine right of kings, or in the divine right of man. Germany with all of her barbarism and despotism is the legitimate outgrowth of the belief in the supremacy of a kaiser. America with all of her freedom, with all of her devotion to principle, with all her passion for the emancipation of mankind, is the legitimate and inevitable incarnation of the belief in the supremacy of man. It was inevitable that America must some day face deluded and arrogant Germany, to settle forever whether kings or the people were supreme, whether government was for the sake of a few, or for the benefit of all. No small burden to place on the shoulders of Democracy; but freedom-loving America gladly and proudly assumes the responsibility, knowing that upon the victory of her principles depends the life of mankind in all the centuries to come.

There were some cynics who have argued that a Democracy could never be strong enough to cope successfully in war against autocracy with all its efficiency and heathenness and intrigue. No more base scandal could be spoken against the spirit of government by the people than this. America accepts the challenge of autocracy, and without fear faces the stupendous task of proving that in the hour of struggle, a Democracy inspired by worthy ideals must be victorious over an autocracy animated only by lust of power and by greed of wealth and by unholy ambition for territory.

America is proving to the world that a republic can be true to the ideals and to the hope of her founders; that she can be animated by holy principle; that she is willing to assume her share of responsibility for the maintainance of justice; that she is ready to give without measure of the wealth intrusted to us by God; that she counts it all honor to make any sacrifice so that there may be established that universal kingdom of God that is based upon righteousness and good will and brotherhood.

We will not forget at this time the supreme Americanism of our martyred President, Lincoln. You will remember that in the midst of a great struggle which was to prove that a Democracy could not be based upon slavery, he pleaded that the war should not end until the main issue had been once and forever determined. Nor can any loyal American hope for anything less at this time when a new and greater struggle is being waged for the emancipation of all races. America will not lay aside her arms despite any cost, until the complete victory has been won over that kind of government that holds cheap honor and humanity and justice.

Less than this we dare not do. Only by thus doing can we be true to our heritage. By all the suffering inflicted upon helpless Belgium; by the rape of defenceless women; by the 164 graves yonder on the bleak shore of Scotland where sleep our brave soldiers from the Tuscania, hurried to their untimely death by the ruthlessness of a heathen foe; by all the sacrifices that other generations have made in defense of justice; by all the hopes that were in the hearts of the founders and defenders of America, regarding her freedom and her welfare, must America's new covenant to be to her inheritance until Prussianism in all its hideousness be crushed and Christian Democracy become the priceless possession of all men. (Applause).

Toastmaster Bookwalter: I wish to say to the members of this Association that one of the distinguished guests this evening is Judge Geiger of the United States Court, and I became extremely fearful when Mr. Richardson began to talk about allowing unfair competition that he might be skating out on thin ice. He looks with jealous eye upon these things we all like to do in our own business, if we don't get found out. But I am sure someone couuld prove an alibi for this Association anyhow.

We are standing tonight in the Riley Room. Before I introduce the next speaker I want to give you just a little look in upon the character of James Whitcomb Riley. It was my extreme pleasure for five years to spend one month with Mr. Riley in Florida, and for the last two years we were together every day. One morning we were over on the Atlantic coast and laid down in the sand. Mr. Riley was paralyzed on the right side. I stretched him out on the sand and then heaped the hot sand up over his side and arms, made a pillow of the sand under his head, and then climbed under the umbrella and we laid there for a long time. Finally he said, "Charlie, have you ever thought anything about immortality?" I said, "Yes, I am over fifty years old. I did not think much about it until recently, but I do now. "How about you, old man?" "Yes," he said, "I just sit around all crippled up and my mind is busy all the time." I said, "What is your conception of it?" I wish I had had a stenographer concealed behind that umbrella, because he went on to tell me of his ideas of the future life. I am only summing it up, he said, "Old man, when the time comes that we pass through this thin veil that separates us here from over there, and we find out how much more wonderful that which waits us over there is as compared with our idea of it, we will then for the first time wake up to the wisdom of God Almighty in not allowing us here to know what we are going to get over there, because had He done so, every blamed one of us would commit suicide in order to get over there." No one knew Mr. Riley's character better than Mr. Herschell, and I am certainly pleased to present to you Mr. William Herschell to respond to the toast "Our Jim." (Applause.)

OUR JIM.

WILLIAM HERSCHELL, INDIANAPOLIS.

"When life was like a story holding neither sob nor sigh,
In the golden olden glory of the days gone by."

Mr. Toastmaster, Ladies and Gentlemen:

Our distinguished toastmaster is being a little shy with you fellows tonight, you brickmakers. As a newspaper man I have been attending conventions in Indianapolis for a good many years, and I have heard Mr. Bookwalter, as mayor, welcome these conventions. He is a versatile gentleman, he has been everything, belonged to everything interesting, because he likes to be in on things, but I have not heard him confess tonight that he had ever been a brickmaker. I don't understand. The only other time he ever dodged anything was when he addressed the embalmers. He had not been an embalmer and he may not make a brick, but he can hurl them, because I work on a newspaper he has hurled them "at."

I also know something else about Charlie Bookwalter. A couple of years ago I had the pleasure of making a trip with him over the Dixie Highway from Chicago to Miami. And when he confessed tonight he liked prize fights, or boxing, I recalled also that he has a liking for crap shooting. When we arrived at Elizabethtown, Kentucky, Mr. Bookwalter was met by Judge Rider. "Book" was looking a bit dusty. The porter, a colored citizen who stuttered, approached the visitor and said "Mr. B-b-bookwalter, c-c-could I sh-shine yo' shoes?" Mr. Bookwalter said "Yes, of course you can shine my shoes. Judge, is he a good shiner?" "Oh, yes," said the judge, "that boy will take good care of you."

William Herschell, Indianapolis, Ind.

So he shined him up, and Book then asked: "How much do I owe you?" "B-bout b-b-out ten cents." Mr. Bookwalter said, "Tell you what I'll do; I'll pay you twenty cents or nothing, but you have to get out your dice and prove it." The darkey said, "N-no suh. N-no suh, Mr. Bookwalter! I don't fool with dem things no mo' since last religion come along here. I don't fool with dem no mo'." The judge smiled, looked around and said: "Nigger, shake dice with Mr. Bookwalter." And Mr. Bookwalter paid twenty cents for that shine.

I want, before I begin speaking of our beloved friend Mr. Riley, to tell you of another little incident connected with our stop at Elizabethtown. The stuttering darkey was connected with this story too.

There were two darkies attached to the hotel, the one who stuttered and one who did not. Kin Hubbard, whom many of you know as Abe Martin, was one of the touring party. The next morning the darkey who did not stutter knocked at Hubbard's door and said, "Dis am de porter dat don't stutter." Kin said: "Well, what are you after?" "I want to shine 'yo shoes befo' dat stutterin' porter come along. I can shine yo' shoes befo' he could ask you could he?"

The toast to which I am to respond tonight is "Our Jim." We have a strong sentiment in Indianapolis and Indiana that centers in this room. As others have told you, this is the Riley room, because here on the night of October 7, 1915, a dinner was given to honor James Whitcomb Riley, the sweetest singer the world has ever produced. There was a long table here, and I think about where the Governor now sits James Whitcomb Riley sat surrounded by a very distinguished company. Charles W. Fairbanks was the toastmaster. Along the table were distinguished guests, including Col. Harvey of the North American Review, Booth Tarkington, William Allen White, George Ade, Young E. Allison of Louisville, Albert Beveridge and Dr. Finley of New York. That dinner was one of the most brilliant functions it has ever been my privilege to attend. There were more big brains at work here that night than were ever turned loose in any room, unless it is tonight. There was just this difference; that night it was literature, tonight it is patriotism. If James Whitcomb Riley were here tonight he would say this room should be christened in the name of Old Glory. (Applause.)

I happened to have a very pleasant acquaintance with Mr. Riley and there are a good many stories that could be told about him. I am not going to tell them tonight, but I do wish to tell you one. You will remember that at one time he traveled around the country with Bill Nye, good old laughing Bill Nye. They used to have an advance agent by the name of Amos Walker, who was a character in himself. He went ahead of Riley and Nye and advertised them. Amos would drop back occasionally for a little visit with Nye and Riley. One night, some place up in Michigan, I think it was, they were invited to the home of the President of the Lyceum—now they are Chatauquas—for dinner, and the host, in order to make conversation while he carved, said to Bill: "Mr. Nye, do you carve?" "Oh, yes," said Mr. Nye, "I carve. I carve at home, but my preference is liver. It has no bones in it." The host then turned to Mr. Riley: "Mr. Riley, how about you?" "Well, being a bachelor," said Mr. Riley, "my experience in that line has been limited to depot sandwiches. I use a knife in opening a sandwich, to see if there is any ham in it." Then the host called on Mr. Walker. "Mr. Walker, do you carve?" "Oh, yes, of course," Amos replied. "Being a man of family. But never in my long experience have I been able to make the gravy match the wall paper." (Laughter.)

I shall not attempt to talk to you about Mr. Riley's poems. Most of you are familiar with the things he has written, "Out to Old Aunt Mary's," "Old Sweetheart of Mine" and the rest of them. I am only sorry the Riley quotations that were up in these arches have been taken down, for they told of the spirit of Mr. Riley. I will tell you of the last days of his life, its close. One incident I well remember. Mrs. Richards, a local sculptor, was working on a clay bust of the poet. About ten days before his death, I was there to see how the clay model was coming on, and Mrs. Richards had remarked to Mr. Riley that she thought every human being resembled an animal in some way. I laughed at that and said: "What animal does Mr. Riley resemble?" She replied: "He looks like a big white owl." Of course, we had a smile at that. Then I had to find out what I looked like. I insisted possibly it was a pug dog. Mrs. Richards said: "No, I know what you look like, all right." I told her I would like to know, and finally she exploded: "If you must know, you look like a turtle." I had always thought a turtle was a fish.

It was after these last happy days that the news came of his passing and a great sadness came over this city and over the world, because a real singer had gone. I am not going to talk of that. I merely want to impress upon you for a moment that this room in which you sit is not just Indiana's shrine. It is a world shrine. We want you to take home with you the impression that here was the home of Riley. We hope you have been over to Lockerbie street. We live in a Riley atmosphere here in Indianapolis, for we have his old home in Lockerbie street and are familiar with his old walks and haunts. They are all dear to us. Today I had a letter from a little girl asking me to rewrite for her a little sentiment I printed at the time of Mr. Riley's death. Many said it reflected the spirit of that sad time. And Mr. Randall has asked that I give you my few simple lines.

"Children, tread softly in Lockerbie street,
Someone you loved now lies slumbering there.
Someone who loved you in comradeship sweet
Rests at the foot of eternity's stair.

Voices kept calling him out of the past,
Voices all fondly familiar to him.
Then came the one; he must answer at last—
Dear Old Aunt Mary was calling her Jim!"

(Loud applause.)

Toastmaster Bookwalter: My job is finished. (Handed gavel to Mr. Randall.)

Secretary Randall: Well, mine is, too. I am sure that from this time on as we journey down life's pathway, the word "Hoosier" will sound a little sweeter to you than it ever has before. We are all glad you have been with us this week, and we are happy over the success of this meeting. I think this event tonight is one of a lifetime. I hope to live a few years more and to have you back with us again.

HUH-UH! NOT ME!

By William Herschel.

Co'se Ah ain't sayin' Ah won't do
Des whut ma country want me to,
But dey's one job dat Ah fo'see
Ain't gwine to 'tach itse'f to me—
Huh-uh! Not me!

Dat's dis heah ahplane stuff—No, Boss,
Ah'll bar some othah kin' ob cross
Lak drive a mule, er tote a gun,
But Ah ain't flirtin' wif de sun—
Huh-uh! Not me!

Ef Ah mus' do a loop-de-loop
Let mine be 'roun' some chicken coop;
It ain't gwine be up whah de crows
Kin say Ah's trompin' on deir toes—
Huh-uh! Not me!

It sho' look sweet, Ah don't deny,
To be a-oozin' 'roun' de sky,
But dat's fo' folks dat's in de mood
To pass up love an' gin an' food—
Huh-uh! Not me!

Down heah Ah firs' saw light ob day,
Down heah am whah Ah's gwine t' stay;
Folks, Ah don't keer to hab ma feet
Git too blamed proud to walk de street—
Huh-uh! Not me!

So, Ah'll des wait till Gabr'el brings
Dem good ole-fashion' angel wings
Den, as Ah pass de ahplanes by,
In pity, Ah'll look down an' sigh—
Huh-uh! Not me!

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

Part XXIII.

Furnaces.

THE FURNACE is the most important part of a kiln and upon it largely depends the economy and success of the burning.

There are two general types—the flat grate and the inclined grate, or more properly, pit furnaces—which include nearly all the furnaces in common use in clayware kilns.

The common flat-grate furnace, such as we find in boiler furnaces is too well known to need any description.

The selection of the grate bar best adapted to the purpose is an important item in economical operations and many plants may net a comfortable profit by attention to this detail. The ordinary double parallel bar has not good distribution of the metal and in consequence its life is short and the waste in fuel excessive. The herring-bone bars with wide side ribs are better, although objectionable in that the proximity of the ribs in adjacent bars does not give full opportunity for cooling, which is necessary to keep the bars from sagging down in the center. A better type has a single central deep rib with checkerwork top, Fig. 22.

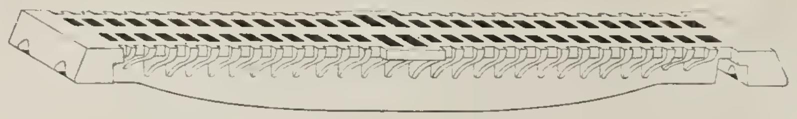


Fig. 22.

The rocking grates, of which there are several on the market, will prove a profitable investment over the usual fixed type of bar. The average clayworker looks askance at the cost of an installation, but views with complacency a serious fuel loss simply because the loss is charged to burning and does not appear on the books debited to the proper operation. Clayworkers would find it profitable to analyze the ash for carbon, a simple and inexpensive analysis—and then by tests of bars and furnaces select that which shows the least loss.

A double furnace (Figs. 23 and 24) has proven very satisfactory in burning ware where constant oxidizing conditions are required and, in fact, such a furnace is preferable to a single furnace in any operation. The twin furnaces have a single bag, and they are fired alternately. When one is freshly fired, the distillation gases are a maximum and the secondary air is insufficient for complete combustion. The adjacent furnace has in the meantime reached the burning coke stage, likely with some excess air. The products from both furnaces mingle more or less in the single bag and that which one lacks in air and temperature is supplied by the other. If the furnaces are clinkered at proper intervals, one will be at its maximum heating efficiency when the other is approaching the period of lowest efficiency, followed by chilling effect of clinkering and filling with fresh fuel.

Secondary Air.

Secondary air is essential for complete combustion, and its admission to the furnace has been the subject of considerable study and numerous patents. A few holes in the furnace door are the simplest arrangements and likewise the least satisfactory. Leaving the doors partly open is less satisfactory, because of the carelessness of the operators. In such operation we have found the openings varying from half an inch to half the width of the firing hole.

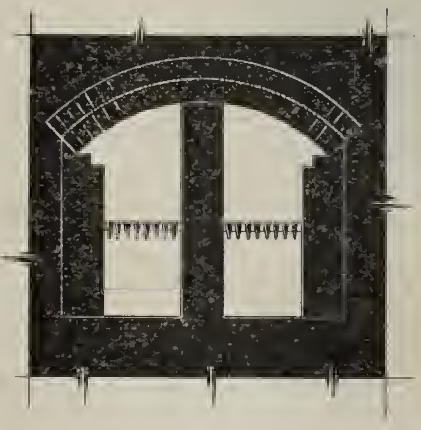


Fig. 23.

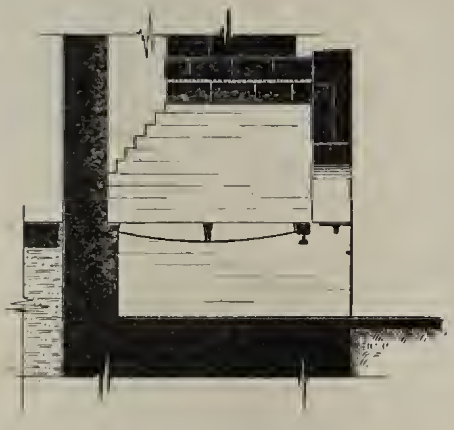


Fig. 24.

Setting the door to leave a space between the bottom of the door and the firing plate is better, since it introduces air at the bottom, but being a fixed opening makes it objectionable, especially where alternating oxidizing and reducing conditions were required. Leaving a space between the door plate and the ends of the grate bars is still better (see Fig. 24) in that it brings the air into immediate contact with the burning coal, and it can be readily closed by a loose plate or even by coal tailing out on the door plate.

A number of patented constructions have been introduced which look good on paper, some of which have merit in practical use.

Fig. 25 and Fig. 26 illustrate one method of introducing hot secondary air, which has been extensively used.

The furnace lining is separated from the back wall by a four-inch space and this space connects with the outside air through a hole in the front wall, and similar holes in the furnace lining introduce the air into the furnace. The air is heated by the furnace walls before entering the furnace and it can be shut off in any degree by closing, partially or entirely, the opening in the outside wall.

We had extended experience with this design, but we do not know what benefit resulted. Perhaps, when first installed it was effective, but after a time when the furnace doors became warped and no longer close fitting, and the secondary air ports became clogged with ash and clinker, it is likely that the resistance to the entering air was less around the doors than through the air ports, and that the secondary air entered by this route rather than by the one provided.

Another method which is more promising introduces the air through the ash pit walls from the inside, then rises in the space between the furnace lining and wall and enters a similar space between the inner and outer crown arches, thence through ports into the bag, as shown in Fig. 27. This method has the advantage over the preceding one in that the upcast would act as a stack, and possibly there would be some aspirating effect of the gases rising in the bag.

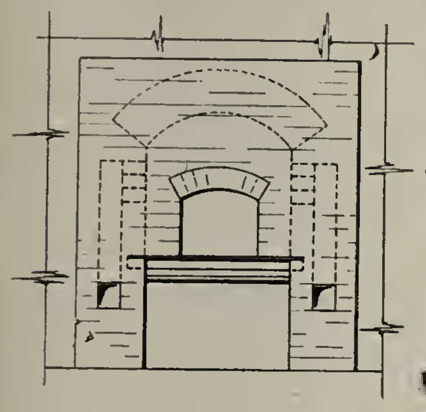


Fig. 25.

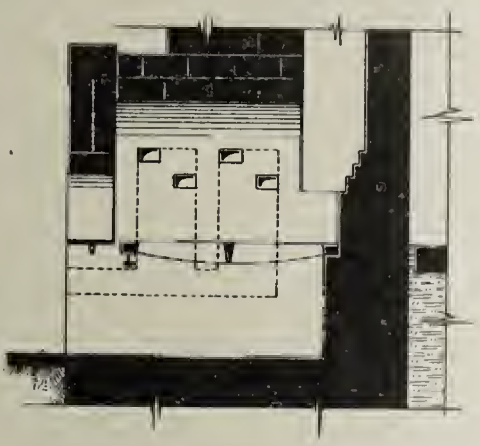


Fig. 26.

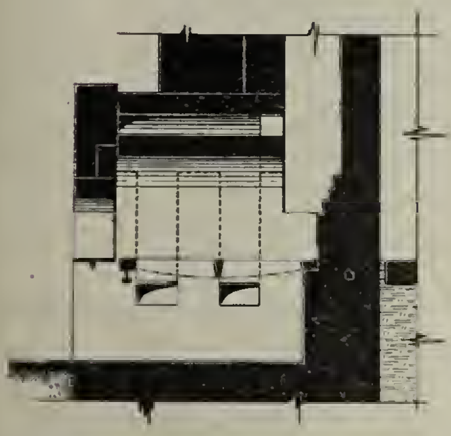


Fig. 27.

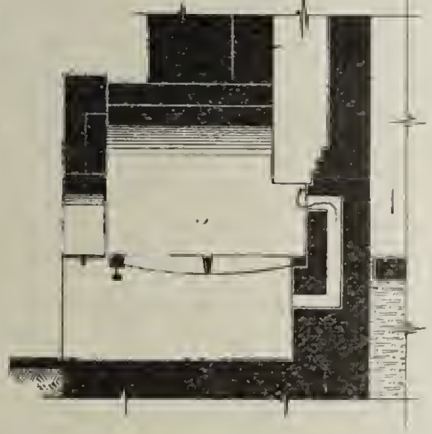


Fig. 28.

Another method, shown in Fig. 28, introduces the air from the ash pit through the base of bag wall, but if it is effective, it is bad in that the air would tend to cool the bottom of the bag wall, whereas we depend upon the heat conducted through the bottom of the bag wall to finish the ware on the kiln floor near the bag wall.

Several designs have been worked out to use the heat from the flues under the downdraft kiln floor by means of parallel adjacent air ducts leading to the furnaces—in one instance for the generation of power steam—but these efforts are usually unsatisfactory in that they tend to cool the part of the kiln we have the greatest difficulty in heating up.

Coking Table Furnaces.

The coking table furnace is used in many plants for bituminous fuel.

Fig. 29 illustrates a single furnace with a double coking table, and Fig. 30 shows a double furnace with a single coking table.

The coal is first placed on the coking table, then before each firing the coke is pushed off the table and falls on the grates where the combustion is completed.

A type with the coking table in front is shown in Fig. 31, which has been used to some extent in kiln furnaces and also in boiler furnaces. This furnace can be clinkered without opening the firing door and secondary air enters through the space between the coking table arch and the grate bars. The objection to these furnaces is that they involve extra labor on the part of the fireman and increase the period during which the firing door is open. In firing a flat grate the fireman spreads the coal over the furnace by a dextrous movement of the shovel, but to level the coke after it leaves the table requires a separate operation before again charging the coking table.

The McManigal furnace, shown in Fig. 32, combines a coking table with the pit type of furnace, which simplifies the operation in that the pit furnace requires no leveling. Secondary air in the natural draft furnaces is admitted through small horizontal ducts in the coking table as shown by the dotted line.

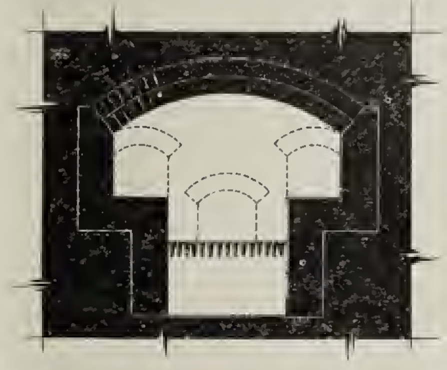


Fig. 29.

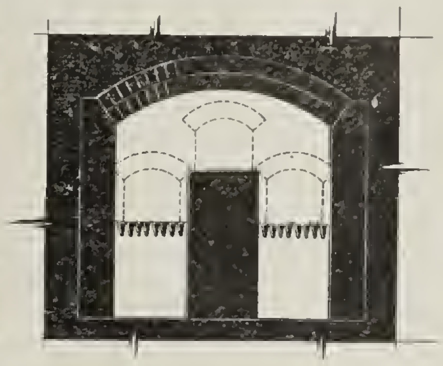


Fig. 30.

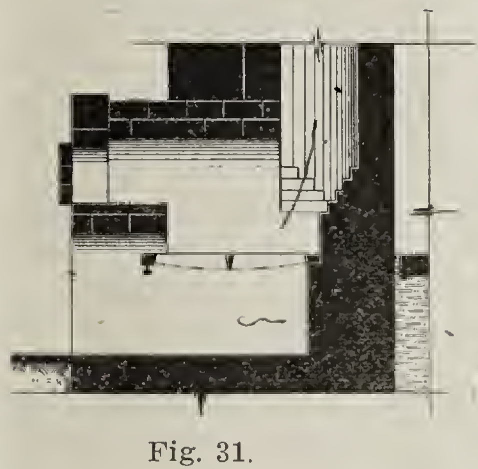


Fig. 31.

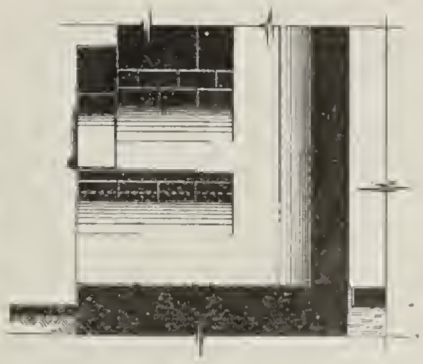


Fig. 32.

(To be continued.)

THE GREAT DUTY.

As we go about our daily tasks in peace and safety men are dying every minute on the battlefields of Europe to save civilization. Our own gallant soldiers are shedding their blood in France and our sailors engulfed in the waters of the Atlantic as they go in defense of America's rights and honor.

Upon our performance of the work committed to us depend the lives of thousands of men and women, the fate of many nations, the preservation of civilization and humanity itself, and the more efficient and prompt we people of America are in doing our part, the more quickly will this war come to an end and the greater the number of our soldiers and sailors who will be saved from death and suffering and the greater number of the people of other nations released from bondage and saved from death.

To work, to save, to economize, to give financial support to the government is a duty of the nation and to the world and it is especially a duty to our fighting men who on land and sea are offering their lives for their country and their countrymen.

SOLVING THE HOUSING PROBLEM.

WHETHER the brick man or the cement man finally solves the housing problem which confronts many of the large cities of the country depends more upon the brick man than the cement man. Heretofore brick manufacturers have appeared rather indifferent to the housing problem, excepting as it might come up incidentally in their sales. For themselves they have hardly devoted any attention to it, nor have they considered the possibilities in their material as the cement men have done.

To go over the many statements made concerning the lack of proper houses in various cities at this time is useless. The news and trade press are both filled with complaints regarding lack of houses, and by this is meant suitable houses for working men that can be hired for a rental within their means. In other words, no builder, speaking in a general way, seems to have discovered the possibilities in erecting houses for workingmen. They have expended a great deal of effort upon the planning and construction of expensive houses for wealthy owners. Perhaps the advertising value of this work has appealed to them. Perhaps some other reason has been the determining influence. Whatever it is, the fact is as stated.

Unfortunately for those who operate in this way, the great bulk of the American people live in moderate priced, or low priced, houses. And notwithstanding the development and prosperity which are to come this will continue to be true indefinitely. It would seem, therefore, that the man, or the firm who considers the possibilities in low, and medium, priced rentals will be in position to make a good profit upon such efforts any time he chooses to begin.

Perhaps much of this increment will have to be made outside of the larger cities. But that is a detail which can be determined after the operations begin. The main point to consider is the necessity for desirable housing at low, or medium, prices. In this movement brick men ought to take more interest than they have ever done yet. Unless they do the cement men will distance them in a field which ought to be held by manufacturers of burned clay, under whatever form it is sold.

On a recent visit to Philadelphia some housing operations were examined which seem to promise excellent results. While not all cities could work out the problem as it has been worked out there, some could, and with benefit to the investor, the builder and the tenant.

One operation in the Kensington section was visited which consists of 194 houses all exactly alike. They are built of brick, are what used to be termed one and a half story, though two stories is nearer right, six rooms and bath and equipped with electricity, hot and cold water, hot water heat and will have gas when the mains are extended to that section.

Each has a commodious porch and the dearly prized element of privacy is managed adroitly. The only possible promiscuity is in the porches, which run the length of the block, with only a low railing for a division.

The walls are solid brick, nine inches thick and so constructed that a single wall serves for two houses. The economy in construction is considerable when the number of houses erected is taken into account. Perhaps some other builder would consider it better to double the walls, but in this operation they seem adequate when used this way.

These houses rent for $20 a month and the last one was taken before it was ready for occupancy. Of course Philadelphia seems to be admirably adapted for such operations. It spreads over an immense space and ground is not as expensive as it is in most other cities, yet the housing problem as it has been worked out in cities which cling to the apartment type are not entirely satisfactory. These separate homes meet the American idea more fully and are better from every standpoint, physical, moral or otherwise.

The owner of this particular operation is different from some. He understands that many humanitarian movements have become fixtures in the social fabric and has arranged to meet some of them. One is a playground for the children. The houses are built around a part of a square, as the street divisions are called in Philadelphia, and inside this square he is to construct and equip a modern playground for the children. While it is something of an innovation in operations of this sort it is proof only that the builder is shrewd. He realizes that if the energy of the children is consumed upon a playground, supervised, perhaps, it will not be devoted to destructive investigations about his houses. The investment will undoubtedly pay for itself many times over in the saving it will insure in other directions.

The only criticism upon the general plans of these houses is that the entrance vestibule is too small. It should be expanded in some way so that it need not be necessary to open the house door in opening the outer front door. Otherwise the plans are admirable in affording a maximum of convenient room, plenty of light and air, and considerable architectural beauty in a minimum of space.

The lesson to the brickmaker lies in studying the question of housing to learn how he can better adapt his product to present requirements. It is almost impossible to obtain lumber in some sections of the country and where it is obtainable the expense is so heavy that few feel as though they can afford to use it. Elsewhere the fashion has turned against wood dwellings and most builders are using either brick or cement. With the advertising campaign the cement people conduct each year it is almost impossible to compete with them unless an extraordinary effort is made to overcome the effects of their concentrated work. This is not intended as an advertisement for them, but it represents fact in the development of their business as compared with manufacturers of brick. And brick men have all the advantage of utility and beauty of material.

The situation requires more study from the brickmakers' standpoint than has been given it. Until this is done no one can say definitely what might be possible under more favorable conditions. The most that can be said is that manufacturers of burned clay used in building need to study this problem from the point of view of the builder and the contractor. Only in this way can they become acquainted with the possibilities, nor can they otherwise understand the necessity.

To put the proposition another way—the situation is such at present that much building of houses must be done, not alone in one section of the country, but everywhere. The number of workers in and about manufactories is increasing faster than houses can be provided for them. Unless builders begin soon to make preparations a congestion, it might be called, will develop which will require a great deal of effort to straighten out, and unless some means can be devised to insure quick and permanent construction conditions will be worse in the near future.

At this moment investigators appointed by the government are considering what shall be done to overcome the shortage of houses in great industrial centers where munitions and other war necessities are made. The suggestion is that the government take over the proposition of housing these employes, at least as long as their services are required in these special war material factories. This merely shows the urgency of the demand and the necessity of beginning operations at once.

To go back to the Philadelphia operation, it must be said that very many features of this method of building seem to be of unusual merit. The expense is reduced by erecting rows, which furnish sides for each other. The reproduction of a common plan reduces the expense of making fresh plans for each house, and in the erection of approximately 200 in one operation this is considerable. The cost of material is reduced, since it partakes of the efficiency of standardized parts of any other construction. The pieces of lumber, or burned clay, or whatever else may be used in construction work are all standardized. Or, in other words, since the houses are all alike the different parts can be made up in one place, forwarded and put together much as a bridge or other steel work is put together. It doesn't seem like allowing much play for individuality in house construction and may not be the American ideal of a home, yet in the case of the Philadelphia operation the result is eminently satisfactory. For the rental asked the tenants would have difficulty in finding anything better.

It is one method of solving the housing problem. Perhaps it is not the best way. Only time can determine that. But the outstanding feature is that something practical has been accomplished, construction has been achieved at a moderate price and satisfactory dwellings can be furnished at a low rental. The houses combine most of the utilities and attractions usually expected in houses of this cost. The tenants find them comfortable, convenient and within their means. It would appear as though the problem which has confronted many communities, and is confronting them now, more seriously than ever before, in some instances, can be solved by adopting this plan of construction, or some modification of it which retains its essential features, but develops them in some other way. The fact that this, the latest of Philadelphia's operations, is of brick may be a straw which will show something of the trend of events in some localities where construction is in progress.

THE STORY OF STONE.

The story of stone as told by the records of the U. S. Geological Survey holds peculiar interest for the clayworking industry because stone and clay products sometimes enter into competition. Moreover ,there was a time when in the building world stone was taken seriously as a rival to brick and other clay products, whereas today there is every prospect that clay products may enter into competition with and crowd stone seriously out of its one stronghold, that of monument making, that is the one stronghold in the field where it competes with clay products.

The value of stone produced in the United States in 1916 according to the Press Bulletin of the U. S. Geological Survey was $79,041,699. This statement of itself is not very remarkable until we take into consideration other factors. It shows a decline as compared to the banner year of 1913 when the total stone production went up to $83,732,995, but aside from this one peak period the total shows up good and seemingly there is nothing wrong with the industry.

After tabulating the different lines in which stone enters however, there is the significant paragraph:

"All the above decreased in value in 1916 except crushed stone, flux and ganister, which increased respectively 1 percent, 44 percent and 158 percent."

To state it another way, the only increases scored were in crushed stone, flux, and ganister—which is sandstone. And the increase in the latter while being conspicuous in the percent is really a small item because the total sandstone production was only $529,805. The big increase was of limestone for fluxing purposes, the total production there for the year being $13,936,882.

The biggest item in the stone list is crushed stone, with a total of $29,462,952. This is the item that has saved the day for the stone industry and kept it from showing a marked decline. There has been a wonderful development in crushed stone for road building, for big contract jobs and for pulverizing to use for agricultural purposes. Also the activities in the metal industries has called for large quantities of limestone for fluxing purposes since limestone enters largely into the crushed stone trade too, it can be plainly seen that about the only progress made the past few years has been in limestone.

In the building industry the total consumption of stone, rough and dressed, for the year was $15,001,390 and for monumental purposes there was rough and dressed stone to the value of $7,036,536. The only other items going above a million aside from the flux and crushed stone just mentioned, were curbing and riprap.

The use of stone for building, monumental purposes and paving has been on the decline for a number of years and there is every indication that so far as building operations are concerned that the stone business has reached the point where it will enter building operations more as an incidental than as a factor in general construction. This is because of the competition of both concrete and clay products. Concrete for the massive underground work and brick and clay products and steel construction for walls, with perhaps more stone used for trimming incident to other forms of construction than is used in direct construction itself.

It is this which makes the story of stone interesting to the clayworker, this and the added fact that monuments offer a field in which the clay working industry has a chance to enter into competition with stone with every prospect of success if the work is taken up earnestly and in a broad way.

There is no question whatever but that properly burned clay constitutes the best monument or permanent marker that can be made. It is more lasting than granite or any of the stone when properly burned. Almost anything in the way of design can be had and some time in the future it is not only possible but probable that burned clay will be the leading item used for monumental purposes. Just how far and to what extent it may enter will depend partly upon the industry and the effort made to push clay products in the monumental field.

"PAVE WITH BRICK."

One day the county commissioners met
And argued about the material to get
To fix up the roads to make traveling good
And have them the best that they possibly could.
One argued that crack' stone alone was the stuff,
Although it at times made the traveling rough.
Another said, "Asphalt is just what we need
To make the best road in the country." "Indeed,"
Said another, "I see you have very poor taste;
You must think the county has money to waste.
Just listen to me while this thing I unravel;
To settle this thing, we'll repair it with gravel."
"But don't make your final decision too quick,"
Said the wisest of all, "Why, we'll pave it with brick.
To pave them with brick you will show common sense,
For it banishes all the repairing expense."
So, after debating the question awhile,
The wisest among them arose with a smile,
And said, "You show wisdom when you make your pick;
It's the wisest decision to 'Pave with Brick'."

JAMES L. CARSON.

USE OF SHALE EXCAVATOR IN CLAY BANK.

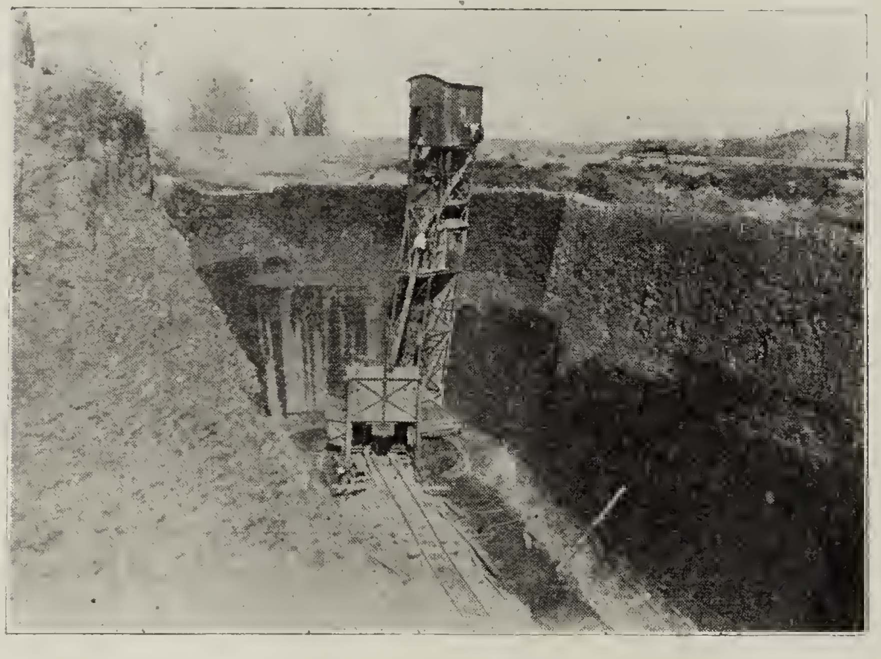
A Description of the Machine and its Operation by the Veedersburg Paver Company, Eliminating Drilling and Blasting.

IN THIS age of forced conservation of energy and natural resources, the ultimate result in manufacture, as measured in labor and material saving, simplification of process and in all factors bearing on higher efficiency in production, must command attention, if the producer is to keep step with the column of progress.

In perhaps no line of manufacturing activity is this more a truism than in the various branches of the clayworking industry—admittedly one of the slowest and most conservative in the adoption of improved equipment and process.

Occasionally, however, necessity compels action, and under this spur the Veedersburg Paver Co., of Veedersburg, Ind., recently hearing of the creditable work of the shale planer at Adel, Iowa, journeyed there to verify the reports of same.

They were so favorably impressed with what they saw that they immediately contracted with the engineering and equipment firm of Stephens, Adamson Manufacturing Co., of Aurora, Ill., the builders, to furnish them a machine suitable for handling their shale excavation at Veedersburg.



Adel Shale Excavator at Pit of Veedersburg Paver Co., Veedersburg, Ind.

This machine was designed to plane a bank of fifty foot height, and to be of ample stability to handle successfully their hard, heavy-ledged, sub-carboniferous shale at that point, and in an amount of four hundred tons per day of ten hours.

This excavator was installed about the beginning of 1917, and is daily demonstrating its ability to easily handle the work.

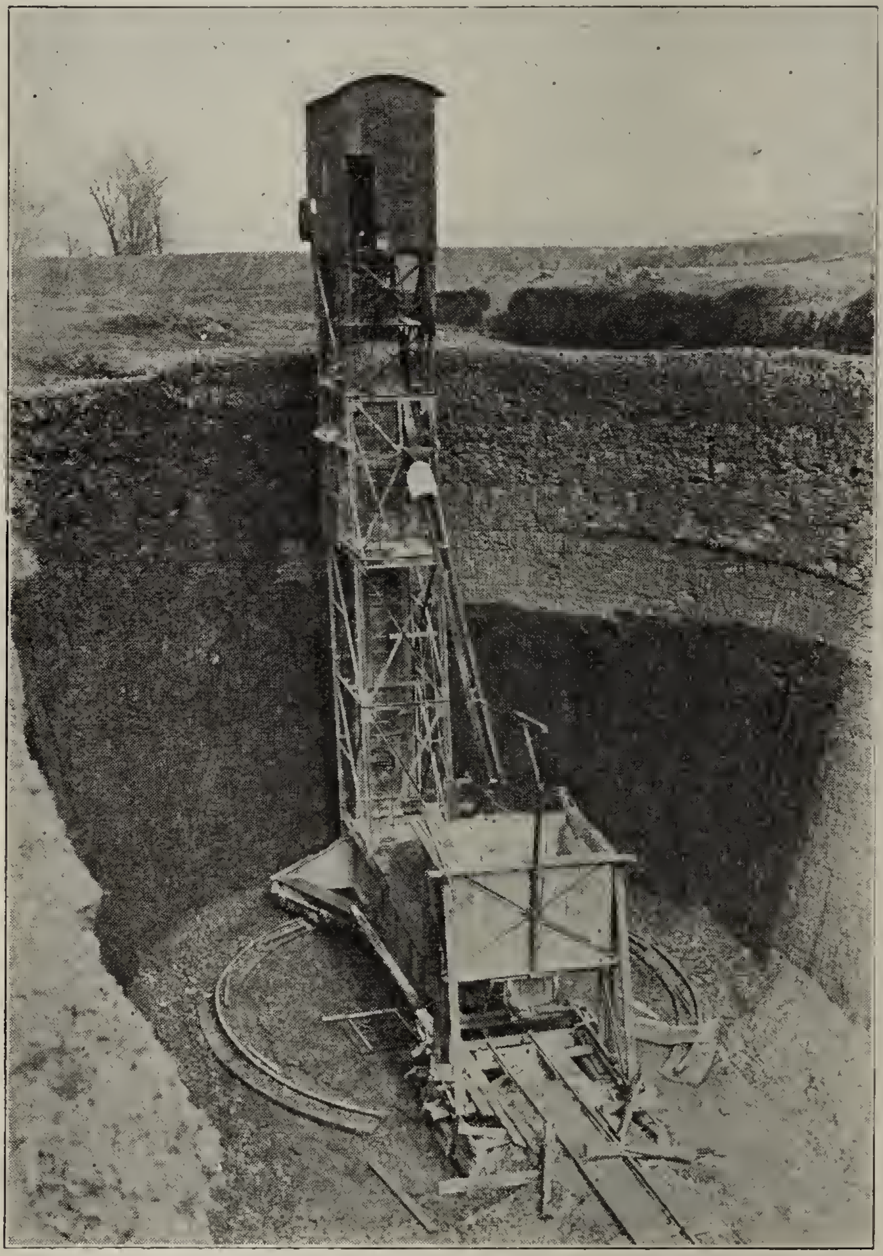
Many interested vistors have viewed the machine in operation during the last season, and all are outspoken in their marveling at its novel and splendid performance.

A list of its distinctive and noteworthy features might be summarized as follows:

This machine, as differing from all other types of shale or clay planers, is especially designed and suitable for "pit" excavation, in that it requires no loose or open ends to the bank, to continue indefinitely the extension of its operations. In other words, the machine could be constructed in a well, about fifty feet in diameter by any desired depth, and, in a level field, and the entire area excavated wholly without the aid of any drilling and shooting whatsoever, as the machine rotates horizontally in a semi-circle, advancing at the same time in a forward direction. This forward motion can be easily altered to any desired direction, right, left or reverse, so that the whole area can be reclaimed with ease.

As also differering from other machines of this class, the cutting motion of the knives in this machine is upward, which exerts no downward thrust on the tower, effectually preventing any lifting or dodging of the machine from its work.

Moreover, as the tower has a distinctive lean toward the bank, the cutting knives, instead of operating at right angles with the strata, cut into the whole at a decided acute angle against the lamina, effecting an easier clipping off of the shale protrusions with a marked saving in power requirement.



Note Circle Track, Storage Hopper and Delivery Chute.

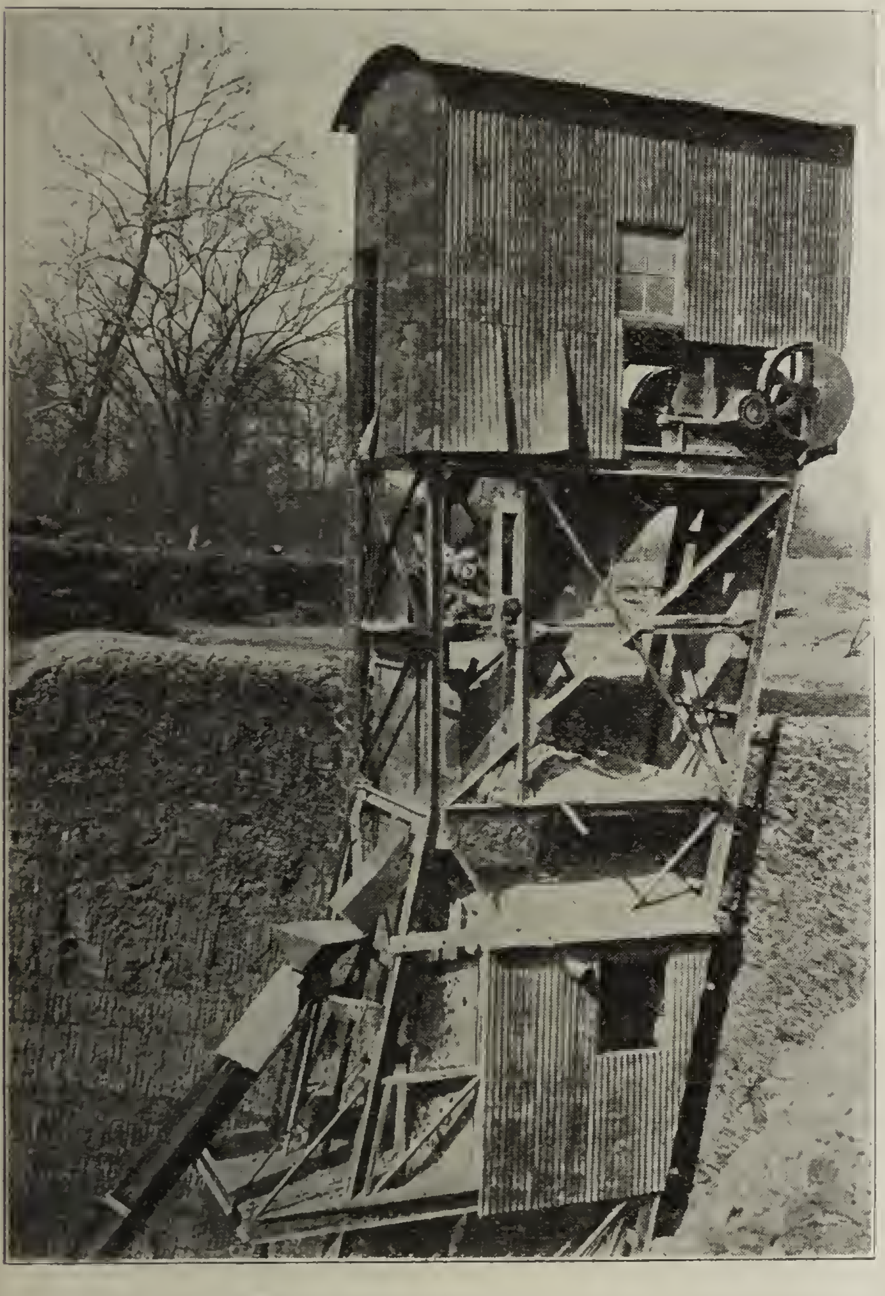
Likewise, as typifying the simplicity of operation of the machine as a whole, the circular traveler track requires no accurate guaging with the face of the cut, as the preservation of this guage is dependent upon the rotating pivot at the rear, a point that is easily maintained stable.

The machine, which is wholly of steel construction, is composed essentially of a heavy, trussed base section some thirty feet in length, which is supported at the rear, and pivots in a small but strong and rigid four-wheeled pivot truck, which runs on a series of short rail sections of about thirty-six-inch guage.

The front end of this base section is supplemented at the sides with outrigger arms set in a radius with the pivot at the rear. These outriggers have, on their lower sides, heavy journal boxes, in which run the axles that carry the chilled iron traction rollers that carry the front end of the machine. These rollers are set in radius with the pivot and bear on the single-rail circle track, which in turn forms a three-quarter circumference about the pivot and provides a suitable runway for the cutting front of the machine in its right and left rotation about the pivot.

On the forward end of the base section is constructed a light, but strong and stable, steel tower, well braced and gusseted to afford the necessary rigidity.

This tower is designed to carry the heavy double-chain bucket elevator, with cutting knives introduced between each pair of buckets.



Top Half of Tower, Showing Operator's Cabin, Vertical Return and Dumping Station.

This double chain, with its fittings of knives and buckets, passes under a pair of "foot" sprockets, at the lower front edge of the machine, thence upward, in a three-sided steel chute attached to the front of the tower, to a suitable height, where it passes over the main head-sprockets, thence through the tower to the rear, where it passes over a pair of traveler sprockets, adjusted vertically for tightening the chain, from which point the chain passes vertically down the tower, through a steel box-chute, to the point of beginning.

The elevator motion of the chain is imparted by a forty H. P. motor installed in the top part of the tower and direct connected by a chain of gears to the head shaft which carries the head sprockets mentioned above.

The rotating motion of the tower is imparted by a five H. P. motor installed in the base section of the machine, acting upon the chilled traction-rollers through gears and differential.

The compound or complete motion of the machine, then, consists of an alternate right and left rotation while the elevator is in motion, with the necessary "advance" or "set up" at each reversal of rotation.

This "advance" is accomplished by the five H. P. motor, acting through a separate chain of gears upon a large horizontal screw, which is anchored to the base frame and on which is threaded the pivot, the pivot in turn meshing into a socket casting bolted securely to the top of the pivot track, which is clamped firmly to its track.

All of these motions are under the control of the operator, who is stationed in the cabin built about midway in the tower. From this station, constantly riding the machine, the operator not only has a birdseye view of everything pertaining to the ground motion, but his close proximity to the cutting face of the bank, even to the facility of an observation window opening from his cabin into the chain-chute on the front of the tower, enables him to keep close watch on all the necessary features of the operation and of the performance and efficiency of the machine at all times.

Ground View of Pit Showing Planer Cut Forty-five Foot Face.

Although the twenty-five knives are all arranged centrally along the chain, the constant rotating travel of the machine gives each knife a different curve, an average of about three inches apart—due also to this lateral rotation the scratches or cuts of the right and left travel cross each other at an acute angle, making it easier for the knives to get their "bite."

The material thus "planed" or "scratched" from the face of the bank by the knives in their upward travel is caught by the ascending buckets and carried upward toward the top of the tower, where the chain passes over the head sprockets and turns at a sharp angle downward toward the rear.

This turn of the chain throws the buckets in practically an inverted position, where their contents are discharged into a chute, which leads downward at a steep grade to a suitable mobile storage hopper located on the floor of the pit at the rear of the machine.

Under this storage hopper are wheeled the rear-dump monitor cars, holding about two yards of material, a few seconds only being required to charge a car by means of a vertically-swinging hopper gate.

Cable and steam hoist then pull the loaded monitor up the incline to a loading tipple built above the railroad siding, where it is automatically dumped into dump-bottom gondola railroad cars of fifty tons capacity, eight to nine carloads being the daily requirements.

Determined to produce a machine capable of standing up to the severe work required in paving brick and similar refractory shales, the builder, co-operating freely with Mr. H. R. Straight, Cer. Eng., of Adel, Iowa, the original inventor, and Mr. B. J. Gallagher, the experienced and capable general manager of the Veedersburg Company, seem to have effectually solved the practicability of shale extraction by this ultra modern method, making this most economical system of shale winning a demonstrated and accomplished fact.

These results came only by the application of the highest grade of engineering and designing ability to a problem that heretofore has occupied but small attention either to the clayworking or engineering fraternities, and the high standing of the builders in the engineering world seems to give bright promise of their ability to meet successfully the many difficult problems in this department of clayworking operations.

Following the latest engineering practice, steel is the slogan in the construction of this latest aid to the clayworker.

The framework is entirely of structural steel, fabricated like a modern steel bridge, all joints being hot riveted with steel rivets and all braces riveted in with ample gussets.

All clutches, sprockets, gears, rotating parts, and, in fact, all parts subject to strain, are of cast steel, the gears with cut teeth.

The heavy double bucket-chain, including the elevator bucket and knife holders, is wholly of cast steel, the knives of ⅝x2½-inch section of high-grade tool steel, the chain with its accoutrements weighing something over three tons.

The circle track is 100-pound standard railroad rail, cold-bent to the proper curvature, and rests on solid planking of four-inch oak, bolted thereto.

The total weight of the machine is about sixty tons.

The method of operation is both unique and interesting. To start, the pivot track is unclamped from its track, the small motor in base section is started, the pivot screw is thrown in forward or contracting gear and the truck is drawn forward to the front end of its travel, about three feet.

The screw is then released and the pivot truck is again clamped firmly to its track. The rotating mechanism is then thrown in clutch and the front end of the machine is rotated to the extreme end of its circle track. A pushing boom is then inserted betwen the side of the base frame, ahead of the pivot section, and quartring forward against the opposite side of the circle track.

The machine then is rotated back; the motion—acting through the boom against the rail—pushes that part of the track ahead the desired distance, the single rail having enough flexibility at the joints (it being in nine-foot sections) to withstand crowding ahead without disturbing the sections on which the machine rests.

The boom is then dislodged and the machine is rotated on to the extreme other end of the track, where the opposite side of the track is pushed forward in like manner.

The circle rail as now advanced bears well toward the forward end of the traction rollers carrying the front of the machine.

The tower is now rotated into a central position on the circle track, where the cutting knives on the front of the tower will be found practically flush with the face of the bank.

The main chain is now started, the machine rotated past the center until the knives begin to run free or out of cut.

The rotation is then reversed and a small advance into the shale is accomplished by clutching up the mechanism, giving an expanding motion to the pivot screw, an indicator in the operator's cab showing the exact advance or "bite" in fractional parts of an inch.

In the "moving up" process, having just changed from the maximum radius of cut, it will be found that the knives soon run out of cut or reach on the face of the bank.

When this is observed, the operator immediately reverses the direction of rotation, effects another advance on the pivot screw and rotates until the other end of his cut is reached.

In this manner the lateral travel of the machine, from a comparatively narrow cut at the start, keeps increasing in width at each rotation until the full semi-circular travel is attained, denoting maximum radius, and the necessity of another moving up of both pivot truck and circle track as before.

On a fifty-foot bank, with four hundred tons as the daily requirement, one such moving up per day is sufficient.

The advantages of the planer method of shale excavation have been published in the past, but will permit of repetition in view of the additional features brought out by this latest design in excavators.

Primarily, the pit is vastly improved from a safety point of view, as compared with any other developed system now in use. No explosives are required in this process. The floor is left in a smooth condition and at any desired grade for suitable drainage, the machine planing the shale to floor grade in the operation.

The tower, leaning some fiften degrees beyond vertical, leaves the front of the cut and the side-walls battered to that extent, making slips or falls of shale highly improbable. This safety is made doubly certain at the front of the cut and contiguous to the machine, where the circular contour, combined with the battered wall, forms a wedging of shale well-nigh impossible of dislodgement.

Next we find a marked improvement over any other method of shale winning, in the perfect mixture of the various strata throughout the deposit.

As, likewise, in the ideal preparation of the mixture, approximately the fineness of ordinary coal screenings through a one-and-one-half-inch screen, with probably fifty per cent. of the total capable of being passed through a one-half-inch screen.

This preparation is found to be ideal for ease of mechanical handling to car, and storage and grinding machinery.

The handling of shale direct from place to pan with almost no loss of its native moisture, coupled with the initial fineness of aggregate, does away with the necessity of preliminary crushing and greatly increases the grinding capacity of the dry pan.

This condition of moisture in the material in turn makes for ideal pugging efficiency and easy and rapid slaking of the particles into the much desired plastic mass.

A smooth, uniform and homogenous clay bar is thus assured, signally free from eruption, check, blister and lamination.

Further along the process, we find a product capable of more accurate drying regulation, with its attendant reduction in dryer loss, and in the kilns a sound ware susceptible of more accurate and uniform burning formula and control.

Collectively, the goal of all clayworkers, a better and more uniform ware, with less waste and at less cost.

School Methods in the Home.—"Did your wife scold when you came home so late last night?"

"You don't know what it is to have a wife who was once a school teacher. She simply made me write a hundred times on a slate, 'I must be at home by ten o'clock.'"—New York Globe.

THE ILLINOIS CLAY MANUFACTURERS' ASSOCIATION CELEBRATES ITS FORTIETH ANNIVERSARY.

THE ILLINOIS State Convention of clayworkers was a quality not a quantity occasion. As was to be expected these war times, the attendance was far below the average, but those who were present listened to some very able papers and enjoyed two days of social intercourse which will help tide over some of the rough spots during the coming season. Secretary Parmelee had arranged a very interesting program, which with but a few exceptions was put through on schedule time. The sessions were held in the assembly hall of the Beardsley Hotel at Champaign.

Prof. H. M. Robinson was the first formal speaker. He discoursed on wages and the cost of living, demonstrating in an interesting way that the high cost of living has affected the wage earner more seriously than it has the salaried man or the employer of labor. He predicted that in the readjustment following the end of the war, the wage rate would continue at nearly the present average; that the decrease would not be so large in proportion as the average cost of commodities, owing to the better organization among all laboring classes.

T. W. McVay, of Streator, presented an interesting paper on "Fuel and Its Relation to the Color of Face Brick," which will be laid before our readers in a subsequent issue.

Mr. E. J. Anderle, of Dayton, Ohio, representing the International Clay Machinery Co., read a paper written by George C. F. Vater on "The Producer Gas Fired Metallic Radiation Dryer," which is given in full on another page.

Other interesting papers were presented by Professors C. W. Parmelee, E. W. Washburn, H. H. Stoek, and Ralph K. Hursh.

"The Benefits of Associational Work" was the topic of a splendid address by G. B. Luckett, President of the Indiana Brick Club, Crawfordsville, Ind. He spoke from personal experience and said that he counted as one of the most helpful influences of his business life the acquaintances and friendships formed in both the local and national associations. It is both pleasant and profitable to know your competitors personally. He gave in brief the history of the Indiana Clay Club, an organization of brickmakers in the Indianapolis district which meets monthly for the purpose of discussing market conditions, cost finding systems, freight regulations, etc., and said present conditions in the building brick line was much more satisfactory to every one in the trade than it was in former years when they were scarcely on speaking terms. He urged those present to make it a point to form the acquaintance and seek a friendly relation with their neighboring manufacturers.

Wednesday evening, after dinner, the delegates took the trolley car for Urbana ,where the Illinois University is located, and were entertained by Secretary Parmelee and Professor C. C. Wiley, the latter giving an illustrated lecture on Testing Paving Brick. The treat of the evening was a moving picture show staged by H. C. Adams, of the Danville Brick Company, Danville, Ill. Motion pictures of the brick plant were shown, and then followed a series of views of brick paved highways in the vicinity of Danville that gave ocular proof to all present that Illinois and Indiana are slowly but surely building first-class brick roads that are a source of much convenience and profit to the local farmers and manufacturers, affording them a means of convenient and economical transportation to and from their plant and markets, farms and granaries. Mr. Adams gave a brief description of his plant and the location of the various highways pictured. A vote of thanks was tendered him for his entertainment ,after which the members adjourned to the University Club where a light luncheon and cigars were served, followed by impromptu speeches. President Stevens acted as Master of Ceremonies and introduced Professor Parr, W. D. Gates, Wm. Hammerschmidt, Theodore A. Randall, and H. C. Adams ,each in turn responding with an interesting ancedote or reminiscence of the earlier conventions. Mr. Adams closed his remarks with a patriotic poem, which was particularly appropriate as Professor Parr has called attention to the immense service flag at the gate of the University already bearing 2,700 stars, the number will be increased to over 3,000 before the close of the present school term.

At the business session Thursday morning, the officers were re-elected, Prof. Parmelee being made secretary-treasurer, in order to simplify the clerical work.

A luncheon was served Thursday noon, at which President James of the Illinois University was the guest of honor. After a substantial lunch, President Stevens, again serving as Master of Ceremonies ,introduced President James who spoke very entertainingly on "The War and Its Lessons." This was followed by F. W. DeWolf, State Geologist, who spoke on "The Mineral Resources of the State." Frank W. Butterworth, of Danville, Ill., gave a brief account of his experiences in Washington ,endeavoring to aid the National Fuel Administration in adjusting the coal supply to the demand, or vice versa, as the reader may choose to put it.

Wednesday afternoon, the delegates visited the Chanute Flying Field, as guests of the Champaign Chamber of Commerce, a special trolley car being provided for the trip. All in all, the convention was one of the best of recent years, notwithstanding the light attendance.

The Indiana Division of the American Face Brick Association held a business session Thursday morning, as did the Illinois Paving Brick Publicity Bureau, and the Illinois Drain Tile Manufacturers' Association.

"GERMAN ATROCITIES" TO BOOST LOAN.

E. J. Chloupek, Manitowoc's energetic Liberty Loan campaign director, recently brought to the attention of William L. Ross, Federal Director of Sales for Wisconsin, some live-wire publicity ideas that set a lively pace for the Wisconsin towns. The stunts suggested by Mr. Chloupek have been indorsed by M. I. Stevens, Wisconsin Director of Publicity, for use all over the state.

A khaki-clad figure hanging inert in a barb-wire entanglement in front of a modern trench ,reproduced in a lot as near to the business center of town as possible will be featured under a powerful search light, while Liberty Loan speakers talk from an adjacent platform. The recollection of the mutilated soldiers whose corpses were returned to the Americans last October by the Huns in just such a manner will give indisputable corroboration to the speakers' points that this is a war for the life of humanity and that every man and woman must buy Liberty Bonds. Questions in terse form will be flashed upon a screen behind the trench. "Soldiers' eyes have been gorged out! What will you loan your Government in support of the great criminal hunt?" "Mercilessly mutilated! Buy Liberty Bonds to break the Hun power that prepetrated these crimes!"

The same trench and entanglements will be used another evening as the background for the figure of Red Cross stretcher bearers shot down while bringing in the wounded. As realistic effects as possible will be achieved that the enormity of the crime may strike home to the spectators.

The bombing of a miniature hospital with a small amount of explosive dropped from a toy aeroplane suspended by wires will be another feature of Mr. Chloupek's tangible demonstrations of "Why to Buy Liberty Bonds."

CHRONOLOGY OF THE FUEL SITUATION.

As THE READERS OF THE CLAY-WORKER are aware the National Fuel Administration has been striving for some months past to reach a conclusion relative to the amount of fuel that the various branches of the industry might use with fairness to themselves and justice to the Government.

December 1st, the N. B. M. A. was asked to appoint a War Service Board, which was done, the president, three vice-presidents, secretary and treasurer, being designated as the official representatives of the Association for that purpose.

January 18th, a meeting of the various lines of the clay industries was held at Washington, an account of which was given on page 46 of the January issue of The Clay-Worker. Owing to the diversity of interests developed at the meeting, no definite conclusion was reached, and the representatives of the various branches of the industry were advised that other conferences would be held later on. The salient incident of this first meeting was the announcement by Mr. Noyes that there was no non-essential industry. This fact was evidently a source of much gratification to a number of the representatives.

February 20th,the second conference of the building brick manufacturers was held. Again no definite conclusion was reached and Mr. P. B. Noyes, representing the Fuel Administration took the matter of the curtailment of fuel for brickmaking under advisement. At this latter conference, Mr. William Schlake of Chicago, and Mr. Warren Griffiss, of Baltimore, attended as representatives of the common building brick interests, having been requested to do so by Secretary Randall.

February 16th, Secretary Randall wrote Mr. Noyes, asking if his presence at the conference on the 20th was desired. This letter was published in full on page 300 of the March 12th (Convention) number of The Clay-Worker. Notwithstanding the facts stated therein, Secretary Randall has been criticised for not being present at the conference,though under date of March 13th Representative Warren Griffiss, of the Baltimore Brick Company writes as follows: * * * *

"AS IT TURNED OUT, THERE REALLY WAS NOT THE SLIGHTEST OCCASION FOR YOU TO HAVE BEEN IN WASHINGTON AT THE LAST MEETING (FEBRUARY 20).

"Mr. Noyes, after considering the information gathered at our first meeting ,decided the brick industry was not susceptible of the regulation he at that time had in mind. That on the contrary, existing and future conditions provided and would provide regulations and restrictions of fuel automatically and the Fuel Administration had decided to let us alone.

"Permission to pool production appeals strongly to some districts in the common brick industry and the proposition is being considered by Mr. Noyes, who has undertaken to gather data relative thereto. I understand the Face Brick Association decided this plan was not feasible with them.

"The appealing argument to Mr. Noyes in this matter is that under a pooling arrangement it is proposed to burn brick only at those plants using the least fuel; the plants made idle to be compensated by those operating under the pool. This plan will appeal strongly in some localities and not at all in others. Its adoption would be purely voluntary. Something may come of it." * * * *

March 18th, a meeting was held in Chicago pursuant to a telegram from Herman Matz of the S. S. Kimbell Brick Company, that city. The meeting was informal, Mr. Matz serving as Chairman. There were in attendance twelve Chicagoans and seven from other cities; namely, John Bass, St. Louis, and R. D. T. Hollowell, Pittsburg, president and secretary of the American Face Brick Association; John Stoner and H. Serkowich, Cincinnati, president and secretary of the American Face Brick Dealers' Association; Frank Butterworth, Danville ,Ill.; Theodore A. Randall, Indianapolis, secretary N. B. M. A., and Charles H. Bryan, Detroit, Mich. The latter attended as the personal representative of George H. Clippert, president of the N. B. M. A.

Mr. Matz read the telegram as follows:

"At suggestion of Government officials, yourself and president of your national association are patriotically urged to attend conference of officers of all national brick associations, including paving brick as suitable for building purposes at the LaSalle Hotel, Chicago, March 18th and 19th, to unitedly offer the Government, through proper channels the resources we represent actually in stock and which may be wisely manufactured in the interest of conservation, speed and real economy from the standpoint of war preparation. We have cooperation of International Bricklayers Union. This should and can be made most important meeting ever held in unselfish interest of brick. Answer Chamber of Commerce, Chicago. HERMAN L. MATZ,

"For Nat'l. Organization Committee."

Mr. Bryan stated that he felt he had been called to Chicago under false pretense, the telegram being misleading in its phraseology. This, Mr. Matz insisted was unintentional and that the purpose was to consider the fuel question and other matters of vital importance to the building brick industry. In considering the latter subject, Mr. Zorn made a lengthy statement declaring that he had been called to Washington by Fuel Administrator Noyes and that following the conference the latter had decided to announce a curtailment of 50 per cent. in fuel allowance for brick making. In the discussion which followed, Mr. Schlake with some heat, criticised Secretary Randall for his failure to be present at the February conference with the Fuel Administration. Mr. Randall replied with equal vehemence that he would have been present had he received a reply to his letter of February 16, but that having failed to receive any direct notice that he was wanted at the conference, there was no occasion for criticism. This latter fact is born out by representative Griffiss' letter quoted above.

At a subsequent session, it developed that the purpose of the meeting was to consider the forming of an organization of common building brick manufacturers for concerted development and promotion work, and it was agreed to have another meeting at the call of the president of the N. B. M. A. The latter is at present sojourning at Hot Springs, Arkansas, with ex-president Fritz Salmen, who is there for the purpose of getting relief from rheumatic tendencies.

March 20, Secretary Randall wired the U. S. Fuel Administration as follows:

"It is rumored that an order is to be issued curtailing use of fuel for burning brick. If such is the case, can you consistently hold the order in abeyance until I can submit further facts and figures relative to the manufacture of common building brick, as per my letter of February sixteenth? An immediate reply will be very much appreciated."

March 22, Fuel Administrator Noyes, wired Secretary Randall as follows:

"Subject under consideration. If found that more data is needed, will call upon you for further conference."

So it seems that after all the discussion, pro and con, mostly con, the matter is still undecided and held in abeyance by the authorities at the National Capital. That a decision fair to the Fuel Administration and to the Brick Industry will be the final outcome, is a reasonable anticipation.

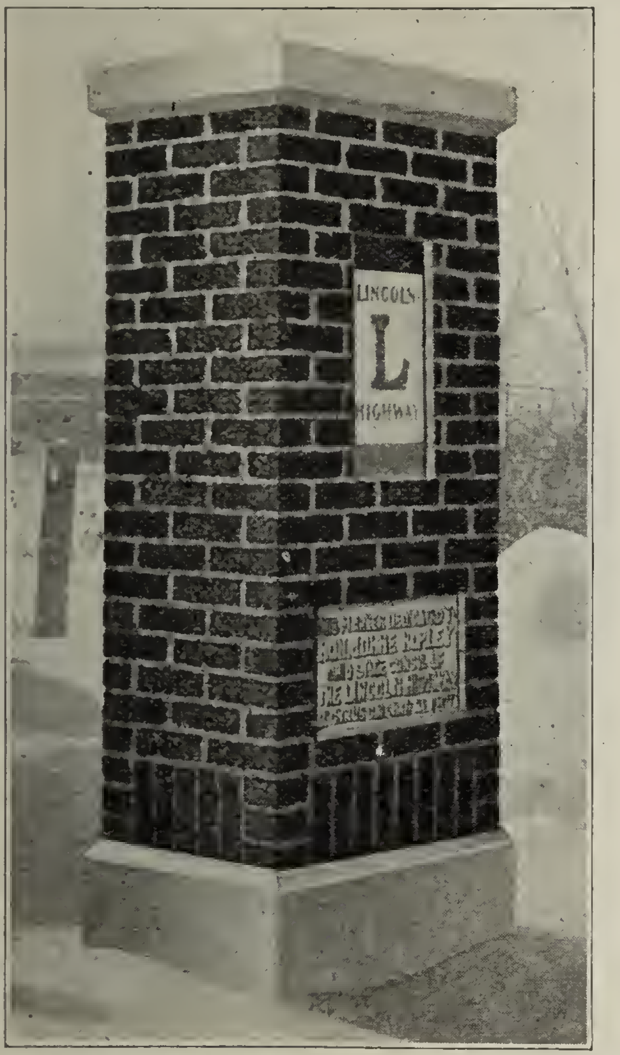
If the shade of Robert Fulton could but see the "boat building" that is going on today!

BUILDING THE LINCOLN HIGHWAY RIGHT

Bucyrus and the American Clay Machinery Company have been interested in the Lincoln Highway ever since the scheme was launched several years ago. From the start we considered it a splendid road improvement plan and the development of the improvement has proven the wisdom of the promoters.

The American company at once started on a campaign to see that brick was used in the improvement of the Lincoln Highway wherever the influence of the American company was sufficient to have brick adopted. All improvements in this vicinity have been made of brick and it is only a question of a short time when the twenty miles through this county are of brick and the influence of good brick will extend beyond the borders of the county.

Having established brick as the standard road in improving the Lincoln Highway the American company was on the lookout for something which would more closely tie the project to clay products, as a consequence we have originated and had adopted the brick highway marker shown in the accompanying cut. This marker was adopted after considerable research work and is a splendid advertisement of clay products.



The Brick Highway Marker.

Heretofore the Lincoln Highway had been marked by painting the emblem of the highway on the telephone poles along the way, but that means repainting every year or so and is a temporary and unattractive marking at best.

The American brick marker is laid up with rough face brick and in the center of the side facing the road is embedded the Lincoln Highway emblem done in terra cotta with the red and blue bands of the emblem burned under glaze. This makes the marker a permanent piece of masonry which will last, as bright as new, so long as the roadway endures.

The American marker is five feet high above the foundation and rests on a six-inch base and is capped by a four-inch capstone. The whole is set on a three-foot foundation. The brick column is two feet nine inches wide to the road and two feet deep. The brick are laid with five-eighths joint, some of the joints being struck and some stripped to ascertain which effect will be the best.

In designing this marker the American company was assisted by the Northwestern Terra Cotta Company, Clybourne avenue, Chicago. The Northwestern people were mighty helpful and took an active interest in the matter. The terra cotta panels made by the Northwestern company were very satisfactory and show splendid workmanship. They are in keeping with and a credit to both the marker and the brick-paved Lincoln Highway as well as to the Northwestern company.

It is the intention to build these markers one mile apart through our own country and the idea is offered to the country at large for use along the Lincoln Highway. The American company will be pleased to furnish information to those interested and would suggest that brickmakers along the Lincoln Highway stir up interest in this most excellent standard of brick construction.

Brick Paved Road and Marker on Lincoln Highway, Bucyrus.

It requires only 250 face brick for each marker and a like number of common brick to make the column solid.

The markers as built at Bucyrus have received no end of favorable comment and can be made the standard marker along the Lincoln Highway from coast to coast if properly promoted by the clay trade. In first cost they are more expensive than painted poles, but in the long run are cheaper and certainly indicate that the Lincoln Highway is conceded to be an improvement of merit and one which is looked upon with all seriousness and co-operative interest by the communities fortunate enough to be on its route.

In cost the markers can be built for practically any amount depending upon local co-operation and enthusiasm. If all items are paid for the cost will run between $25 and $50, and if put up right will be worth the money.—American Clay Magazine.

Strife between employees and employers is a thing to be avoided any time, and in wartime it is a thing to be forbidden.

PRODUCER GAS-FIRED DRYERS.

By E. J. Anderle.*

THE application of producer gas to the drying of clay wares is comparatively of recent origin, and, like most innovations, there is a lack of literature and especially data pertaining to it. This is the reason, therefore, that the producer gas-fired dryer was at first viewed as an experiment. The use of producer gas, however, is now a common thing, and it does not require great imagination to realize that it will in most cases supplant the use of coal in direct-fired furnaces. Most of us will concede this in the case of other industries, although we are more or less skeptical in our own work. It is not necessary to go to other industries, however, to see what is coming. The efficiency of producer gas for the burning of clay ware is an established fact; gas-fired kilns are becoming more numerous every day, and data showing the economy in coal and labor and the better ware directly traceable to gas firing are obtained easily.

So far, then, we are on familiar ground. The subject of drying with producer gas, however, is a different proposition. The temperature at which it is carried on is comparatively low, and also we lose some of the advantages which materially are in our favor in kilns. Moreover, the converting of coal into gas is accompanied by a loss of from 10 to 15 per cent. in the heat value; in other words, the producer is only from 85 to 90 per cent. efficient, the loss being due mainly to radiation. How is it possible, therefore, in the face of this loss to utilize producer gas economically?

In the first place it must be remembered that every furnace is a gas producer, some approximating more than others the producer as we know it. The fuel elements are vaporized, distilled and gasified in the same manner as in the gas producer proper, the difference being that in the furnace the gases are burned as rapidly as they are formed, while in a producer they are carried away for distribution to various parts of the dryer.

In a furnace, however, proper combustion conditions are far from perfect, so that it requires from two to four times the theoretical amount of heat needed to completely burn the fuel. As combustion progresses, the bed becomes compact and so less permeable, while at the same time the draft is limited. A fresh charge of coal requires a greater amount of air to consume its volatile matters, and at the same time its passage is most retarded. Therefore, it becomes necessary that the grates be so arranged as to permit of the greatest amount of air needed at any time for proper combustion to constantly pass through them, or else there follows a large loss in the escape of unburnt gases.

Now, this arrangement of the grates means that during most of the period between fires there is a large excess of air passing through the furnaces, which reduces its temperature, and so a greater amount of fuel must be used to bring the chamber of the kiln or dryer, as the case may be, to the proper temperature. This reduction of the temperature in the combustion chamber also retards the union of the oxygen of the air with the gas of the coal, so that the whole operation is further retarded.

In gas firing, the air supply closely approximates the amount theoretically needed, as gas and air permit of a very intimate mixture. The heat evolved is concentrated in a smaller volume, so raising the temperature of combustion which facilitates the union of the oxygen and the gas.

Moreover, this smaller amount of air necessary means that there is less dilution with the nitrogen of the air. Nitrogen is an inert gas, as it will not burn and give off heat. In passing through the furnaces, it simply takes up heat, much of which is lost by radiation. The burnt gases are, therefore, of a higher temperature, and so transfer their heat more readily, and because of their reduced quantity carry less heat to the stack.

Aside from the standpoint of the combustion of the fuel in the furnace, there is also the important item of unburned coal in the ashes. From your own experience you know that it is not an uncommon thing to see a shovel or more of coal and coke in each ash pit, which has fallen through the grates and which will in all probabality be carted away with the ashes. Then again on cleaning the fires there is an appreciable amount of coal and coke raked out, and all of its heat value lost in the air. In a gas producer most of this is eliminated, and tests have shown that the amount of unburnt carbon in the ash does not usually exceed one per cent.

Now, as to the dryer itself. The producer gas-fired dryer is of the tunnel type, with furnaces at the discharging end of the tunnels. The ware, on cars, enters at the cool or stack end where the temperature is low and the air is saturated with moisture. No drying is accomplished here, the ware merely becoming thoroughly heated up from its surface through to the center. As the cars move up through the tunnel, the temperature gradually increases and the moisture content is less and the ware begins to dry, not from the surface, but from the center outward. This is of prime importance in the drying of tender clays which check easily.

E. J. Anderle, Dayton, Ohio.

The drying itself is done by means of warm pure air, heated by radiation, none of the combustion gases coming into contact with the ware. These are carried out to the stack through the entire length of the tunnel by means of a flue running beneath the cars. The upper surface of this flue for its greatest length is covered with cast iron radiators, cast iron having a relative heat conductivity of approximately 180, as compared with brick. The air which passes about the ware and does the drying enters the dryer through the furnaces through baffled chambers, where it is heated by radiation, and then passes into the tunnels underneath the cars.

There is very little space between the sides of the cars when full of ware and the sides of the tunnel, so that this hot air, which has a natural tendency to rise, must percolate through the ware itself. This does away with any possibility of the hot air short-circuiting to the top of the tunnel and then passing out of the stack without doing any work.

This is one of the few types of tunnel dryers built which does not require a fan for operation, the moisture being drawn off through the same stack as the waste gases of combustion, being partitioned off, however, so that the hot stack always insures plenty of draft to carry off the water.

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*Read before the Fortieth Annual Convention of the Illinois Clay Manufacturers' Association.

At present there are two methods employed of applying the gas to the furnace; one is by means of a burner using preheated air for combustion, and the other by using a burner with a forced draft. This latter system, however, necessitates the use of a fan which is, of course, an additional expense, while the former makes use of the principle which marks one of the advantages of producer gas, the preheating of air for combustion with heat that would otherwise be lost; in other words, it is a regenerative system.

So far we have dealt with the various features of the producer gas-fired dryer which tend toward economy. The final proof of any system, however, lies in its actual operation. What has this dryer done in the way of economy?

Let us refer to a recent test conducted by two well-known professors upon the producer gas-fired dryer at the plant of the Baker Clay Co., Grand Ledge, Mich., commencing July 6, 1917.

Clay—Michigan fire clay.
Wet weight of brick—7.2 pounds.
Dry weight of brick—6 pounds.
Burnt weight of brick—5½ pounds.

Two producers were used on the dryer, which was one of ten tunnels. The producers were of the circular pressure water-sealed type, with an internal diameter of 6 feet. A Virginia lump coal was used, and the test was made while the dryer was being operated by the regular crew.

The proximate analysis of coal was as follows:

Fixed carbon	51.78
Volatile matter	31.12
Moisture	2.58
Ash	10.52
Sulphur	1.04

Calorific value of coal, 12,794 B.t.u./lb, 7,108 Calo/Kg.

Analysis of ashes:

Carbon	4.72
Ash	80.28
Moisture	15.00

Analysis of producer gas (average):

Carbon dioxide	4.70
Unsaturated hydrocarbons	.63
Oxygen	.40
Carbon monoxide	21.63
Hydrogen	9.87
Methane	1.07
Nitrogen (by difference)	61.07

Calorific value of producer gas (average), 121.8 B.t.u./cu. ft., 1,087 Calo/cu. m.

Temperature of producer gas (average), 1,346 degrees F., 730 degrees C. Weight of coal fired, 9,218 pounds, 4,190 Kgs. Weight of coal per hour, 200.3 pounds. Weight of coal per square foot per hour, 10.6 pounds.

Volume of producer gas per pound of coal, 76 cubic feet, 4.73 cubic m/Kg.

Heat Balance of Producers.

	Calories
Calorific value of coal per pound	7,108
Heat in air used per pound of coal	83
Heat in steam used per pound of coal	229
Total heat input	7,420

Heat Distribution.

	Calories
Calorific value of gas per pound of coal	5,140
Sensible heat of dry gas per pound of coal	1,132
Heat in moisture of gas per pound of coal	106
Total available heat in gas per pound of coal, or 86.10 per cent. efficient	6,378

Heat loss in unburned carbon in ashes, 50 calories, or .070 per cent.

Heat loss in conduction and radiation, 192 calories, or 13.20 per cent.

Note the efficiency of the producers in this test was 86.10 per cent., and in other tests we have seen this efficiency run as high as 89.6 per cent.

This only means a loss in the conversion of coal to gas of from 10 to 14 per cent. The average daily output for seven consecutive days in dried brick from the ten tunnels was 32.25 thousands.

The average daily coal consumption for the same period of time was 4,863 pounds, a coal consumption per thousand brick of 151 pounds.

One of the professors further states that about one-half of the tunnels was working to fairly good advantage, while the other half was wasting a great deal of fuel, due to the fact that the machine capacity was irregular and not feeding the dryer with sufficient quantities of manufactured ware.

He further states that in his judgment the dryer, instead of handling an average of 32.25 thousands brick per day, could readily have taken care of 40,000 with the same fuel used, which would have given an easy fuel consumption per thousand brick of 142 pounds.

Unofficial tests of producer gas-fired dryers now in operation on building brick show from 80 to 150 pounds of coal per thousand brick. Unofficial tests on the producer gas-fired hollow ware dryers show from 40 to 60 pounds of coal per ton of ware.

Compare this with the steam tunnel dryer. We believe that you will readily find a saving of at least 50 per cent.

The other day a rough test was conducted upon a steam dryer at Asheville, N. C., with a similar weight brick, and it showed a consumption of approximately 300 ponnds of coal per thousand on a 48-hour basis of drying.

The lowest reported fuel consumption on a direct coal-fired dryer, as far as we can learn, is about 200 pounds per thousand brick, more of them using in the neighborhood of 250 pounds than 200.

The waste heat dryer will probably come nearest in efficiency to the producer gas-fired dryer, although we have no authentic tests on waste heat dryers for comparison purposes. Comparison of plants working under similar conditions, however, and on similar materials would probably show that these two run close together in actual cost of operation.

This is a broad statement to make, but we believe that investigations of a similar nature soon to be made on several waste heat dryers will lead to some very startling comparisons.

The term "waste heat" is in reality a misnomer, as all waste heat dryers require one and in many cases two fans for operation, and it must be remembered that these fans are working twenty-four hours of the day under a load factor that is practically constant.

Another point to be taken into consideration is the deterioration of the cars and the possible scumming of the ware in waste heat dryers, as there is bound to be leakage in the flues between the kilns and the subsequent introduction of sulphur gases into the tunnels.

A waste heat dryer is not practical on a yard where there are less than ten kilns, and it is safe to say that fully 75 per cent. of the plants in the United States will fall under this head.

The producer gas-fired dryer then brings about, first, economy in fuel, and also in labor, since one man can operate thirty tunnels as readily as, say, six.

The temperature and the atmospheric conditions within the tunnels can be regulated to a nicety, which means less checked ware. Its operation is almost mechanical, and it is a well-known fact that the further we get away from the human element in any operation, the nearer we approach to ultimate efficiency.

Producer gas has come to stay in drying as well as in burning. Fuel must be conserved to a greater extent as each year passes, so that the conversion of fuel into gas and transportation of gas to the point of burning, instead of the transportation of the fuel direct, is, and will continue to be, a most potent factor in every plant's conservation policy.

"THEY CUT SOME ICE."

NOW THAT THE different municipalities are studying the arguments on the need of increased prices on ice set forth by the companies selling the same, it is opportune for us to show herewith some pictures taken by the Somers Brick Co. and illustrating a new side line for brickmakers in general.

The Somers Brick Company's plant is located near Atlantic City, where their clay lies below the natural water level with a water bearing strata under the clay. As a result of sixteen years' operation there was naturally left a number of pits which fill with water. During the severe cold weather this winter these pits or ponds were covered with nine inches of ice. Realizing that they could not use their kilns to any better advantage, the company decided that while the brick business was at a standstill, anyway, they would "cut some ice." Anticipating that ice in their vicinity would be very high the coming summer, they accordingly cut the ice on their ponds and stored it in their brick kilns, which made excellent ice houses. The cost did not amount to much, but the profits will be big when the price of ice in Atlantic City next summer soars around the forty or fifty-cents-per-hundred mark.

A point this brings to mind most forcibly is the fact that here is a commodity costing nothing in the making, with little expense in the storing, but bringing big profits in the selling; while clay lands are expensive, and the manufacturing cost high, yet in comparison with ice, the selling price is much below par. The point we wish to make is this, that the average brick manufacturer bases his raw material on the same plane with ice, seldom figuring in the factor of depreciation or the value of clay when estimating the total cost. If natural ice can bring a high price with no cost in the making, and being the least durable material we can think of, why shouldn't clay products, which are everlasting and cost much in the making, bring a better figure than ice?

"Cutting Some Ice" on Clay Pit of Somers Brick Co.

The whole thing in a nutshell is that the average clay products manufacturer does not appreciate what his real cost is and how small his margin of profit until it is too late, and he must go out of business or build a new plant, the factors of depreciation in the end being the real cause. This is just a thought aside from the subject.

We are glad to learn that the Somers Brick Co. has taken advantage of this golden opportunity and given us the means of pointing the way to other manufacturers, who perhaps neglected this most profitable measure. It is too late now for you to "cut some ice," but keep this in mind next winter.

Good team work means working with your neighbor in the business, not against him.

COMBUSTION OF COAL AND DESIGN OF FURNACE.

THE BUREAU OF MINES, Department of the Interior, after several years of experiments in fuel combustion in a special furnace, makes the announcement that from the results it is possible to design a furnace with considerable more assurance as to its capabilities than has heretofore been possible.

Starting with the analysis of the coal to be used and the rate at which it is to be burned, the furnace dimensions in feet and inches can be designed with a reasonable assurance of obtaining a desired degree of completeness of combustion.

The bureau has just made a report on this subject, Bulletin 135, "Combustion of Coal and Design of Furnaces," by Henry Kreisinger, C. E., Augustine and F. K. Ovitz. The publication marks a period in work approved in 1906 by a national advisory board appointed by the President to advise the government concerning fuels. The bureau proposed to conduct such experiments as would make it possible to design fuel-burning furnaces on a rational basis rather than by the cut-and-try methods of the past. The process carried on in the combustion space is influenced by many factors, the most important of which are the volume and shape of the combustion space; the kind of coal used, especially the character and amount of volatile matter it contains; the rate of firing; the quantity of air supplied over the fuel bed; the rate of mixing the air with the combustible rising from the fuel bed; the rate of heating the coal, and the temperature in the combustion space.

Loading Wagons with Ice to Be Stored in Brick Kilns.

The qualitative effects on the rate and completeness of combustion of many of these factors have been known for a long time; but the quantitative data, presented in definite units, of seconds, pounds, feet, or percentages, have been lacking. To obtain such definite information a study of combustion in the space beyond the fuel bed was undertaken, and the results of extensive tests are given in this bulletin. About one hundred elaborate tests were conducted in a special furnace using three kinds of coal—Pocahontas, Pittsburgh and Illinois—and at rates of combustion covering the full range found in practice. These are believed to be the most extensive tests of the kind ever undertaken.

While the bulletin is especially for those interested in the design or reconstruction of fuel-burning furnaces, it contains much of interest to the general engineer interested in fuel problems. Some of the statements sure to arrest the attention of the interested engineer are as follows:

The size of the combustion space required appears to be directly proportional to the percentage of oxygen in the moisture-free and ash-free coal.

The percentage of excess air that gives the best results varies with the size of the furnace and the kind of fuel. This fact explains why in one plant the highest efficiency may be obtained with 14 per cent. of CO_2 in the gases, and in another plant with only 10 per cent. of CO_2.

There is a definite relation for each coal between the excess air supply and the percentage of CO_2 in the furnace gases.

Soot is formed at the surface of the fuel bed by heating the hydrocarbons in absence of air. It is not formed by the hydrocarbon gases striking the cooling surfaces of the boiler. As a matter of fact, only a very small trace of the hydrocarbon gases ever reaches the surface of the boiler. Hydrocarbons that do so are prevented from decomposition by the cooling effect of the contact. The cooling surfaces do not cause the formation of soot; they merely collect soot and prevent its combustion.

It seems that most mechanical stokers are smokeless, not because they burn the smoke, but because they burn the coal in such a way that very little soot or smoke is produced. Hand-fired furnaces are smoky because soot is produced in or near the fuel bed, and cannot be burned in the limited combustion space of the furnace.

Copies of this publication may be obtained free of charge by addressing the Director of the Bureau of Mines, Washington, D. C.

UNITED STATES FUEL ADMINISTRATION TO CURTAIL USE OF FUEL FOR BRICKMAKING.

IN THE COURSE OF AN interview with the officials of the United States Fuel Administration in Washington, the representative of The Clay-Worker was informed that there is no reasonable doubt but that a material curtailment in the use of coal for the manufacture of brick and tile of all kinds will be ordered in the near future. The matters engaging the attention of the Fuel Administration at this time are not so much the advisibility of issuing such an order (which, the writer is assured, has practically been decided upon) as are the amount of curtailment and the date on which such order will go into effect.

Mr. M. W. Montgomery, Dr. Garfield's assistant in charge of industrial fuel requirements, thus expressed himself in answer to the inquiries of The Clay-Worker representative:

"The Fuel Administration is now considering the issuing of an order curtailing the use of fuel, not only for burning brick, but for many other industries as well. I think I may go farther, and say that such an order will certainly be issued. The Fuel Administration has hesitated a long time before actually determining this question, desiring to be doubly sure that no mistake will be made, and that by promulgating such an order we will be helping to win the war and not retard our war work. Furthermore, we wanted to be absolutely sure that there will be a coal shortage. Now that this has been demonstrated beyond a doubt, we are concentrating our attention and our efforts, holding conferences with the leaders in the various industries—some have been held, others are to follow—on the manner in which the curtailment is to be effected, so that the least possible disorganization of business will follow.

"The one fact that sticks out prominently is that we must win this war; all our efforts are being given to co-ordinating and lining up the various industrial operations of the country so that they can give their best help toward this end.

"Speaking of the non-war industries—by which I mean those lines of manufacturing not directly concerned in war work—it is an unfortunate and misleading error to refer to them as 'non-essentials.' There is no such thing as a non-essential industry. Every industry is more or less essential or it would not exist. The difference is one of degree only, relatively speaking, some industries being more essential than others."

When asked by the writer whether it would be possible to state the amount of fuel curtailment which will be made to apply to the brickmaking industry, and how soon, approximately, such an order could be expected, Mr. Montgomery replied:

"It has not been fully decided by the Fuel Administration as to whether, in the matter of the brickmaking industry, the curtailment should be 50 or 33½ per cent.—in some industries which will be affected by Fuel Administration orders it will be 50 per cent.—but I am safe in saying that such an order restricting the brickmaking fuel consumption will be promulgated within a month at most, possibly within two weeks. The Fuel Administration feels that it has through the recent conference of brick manufacturers here with the Fuel Administration, and other reliable sources, secured all the vitally essential information bearing upon the operations of the industry, and can depend upon the industry as a whole to back it up in its efforts to conserve the fuel supply by cutting out the least essential portions of its output. In fact, this point was thoroughly discussed at the conference.

"One thing the brickmakers can depend upon is that they will be treated fairly and all alike. It is no part of the plan of the Fuel Administration to put any concern or any industry out of business. Many communications we receive are to the effect that 'we are willing to help in any and every way; but put the same restrictions on such-and-such industries,' etc. There seems to be a widespread fear among many industries that they are to be discriminated against in some way, while other industries which they recognize as competitors, in a way, will be allowed to operate without hindrance. There is no ground for any such feeling, as we promptly advise these who write in to us, and I think I am safe in saying that whatever fuel curtailment is asked of brick manufacturers will not make the use of brick less popular nor the employment of wood, stone or cement any more so."

YOUTH MUST BE SERVED.

A young U. S. sailor on shore leave wandered into a shop in an English coast town, and the miss at the counter showed him some feminine finery and suggested it would be nice to send to his sweetheart back home.

"Hell, no!" responded the young man. "I'm going to send her a suspender button off the kaiser's pants as a souvenir of my trip."

That young man and thousands more like him deserve the support of all of us back home. Buy a Liberty Bond and back him up.

Information Wanted Relative to Clay Mining.

Editor The Clay-Worker:

I want to get in touch with some reliable parties from whom I can obtain information on the nature, formation, physical properties, chemical composition and uses of American clays.

Am in the mining business and want to know of the work so I can be thus enabled to better determine the different kinds of clay and the purposes for which it is used.

I see advertisements of schools, colleges and individuals proposing to give mail courses on better efficiency in almost every line of business except clay mining, but have yet to see anything like that in the matter of clay mining.

I am a subscriber to and appreciate The Clay-Worker very much.

Yours truly,
H. I. NEELY.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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☞Subscribers when ordering a change of address should give both the old and new address.

Advertising Rates

Furnished on application. The Clay-Worker is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. MARCH, 1918. No. 3.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

It's the busy season.

* * *

Let us put some push into patriotism.

* * *

The flag waves over workers as well as over fighters.

* * *

The business of the day is to keep industry thriving and war work hustling.

* * *

There is digging to do in the trenches of industry here as well as in the trenches of the army abroad.

* * *

Are those original Build with Brick signs still on the job? If not, get some more, for that is a slogan that should be kept recruited up to full strength.

* * *

Feverish rush in the carrying on of work has always made for extravagant cost, and it is in the quieter times of demand that we are able to introduce and work out to better advantage ideas of economy. So the present summer should be fruitful of development in the clayworking industry of cost-saving and economic plans.

* * *

Let us strive for harmony in our thoughts and co-ordination in our works that we may accomplish much in a short time.

* * *

Make motor trucks do your hauling, for you will not only get better returns, but you will get more enthusiasm for good roads.

* * *

Some day people will wonder why the country had to be persuaded to build with clay products, and the more we push the argument the sooner that day will come.

* * *

It is not the cost, but the scarcity of help that will do most to hold building in check, and that is a reminder that we need to keep training youngsters in the art of bricklaying.

* * *

The hollow brick idea has made great progress itself in the clayworking industry, and at the same time has been a big factor in advancing the practice of hollow spaces in the walls built of solid brick.

* * *

With the first epidemic of spring fever there would be a great wondering among many business people of how they are going to find time to take a vacation this year, and a more urgent longing for that same vacation because of the apparent difficulties which surround the obtaining of it.

* * *

Clay products do not enter extensively into shipbuilding or into the export requirements for our allies, consequently, while lumber and steel values are going skyward on account of this outside demand, we are reaching the point where it will be cheaper as well as better to build practically everything of brick and clay products from a chicken house to a mansion.

PROS AND CONS OF THE FUEL SITUATION.

"Much ado about nothing" would be an appropriate heading for the narrative under the heading "Chronology of the Fuel Situation" which the reader will find in another column of this issue. Facts are stubborn things, and it will develop when the facts are all known that there was no occasion for the criticism of the N. B. M. A. executives in this matter, or any other, for that.

THE BUILDING OUTLOOK.

The building outlook appears considerably better than it did a month or two back. For one thing the idea that the government might put some restrictions on building operations during the war period has been dispelled, and those interested in building operations have been assured that there will be no official restrictions. The only handicap in this connection is that which may come through slow transportation and difficulties in obtaining raw material. At this writing with the government taking over the railroad management there is promise that the transportation problem may be solved to such an extent that much better facilities will be offered than could have been had under the old individual system of railroad operation.

With the promise of better transportation and the evidence of much prosperity especially throughout the agricultural districts and around factories and mines there is naturally more encouragement for building operations. Perhaps the main limiting influence will be that of the scarcity of help for carrying on such work.

Even here, however, the situation is clearing some. Many of the places of men called to the colors have been filled by girls, so the shortage in the industrial man power is not as great as it appeared at first. Moreover labor-saving devices have been brought into play more than heretofore, consequently, while there will still be a shortage of man power to limit building operations this shortage will not likely be so acute as was first expected. So, taking it all together, the building outlook has improved considerably, and there never was an occasion when opportunities were better for pushing brick to the end that a greater percentage of brick may be used in building operations than ever before.

THE PROGRESS OF TRADE ACCEPTANCES.

Investigations in the business world show that the idea of trade acceptances is making considerable progress, especially as between manufacturers and retailers. Seemingly, however, we have not yet reached the point of getting the general public to take kindly to this idea. It takes time and patience to educate the final consumer and perhaps for the time being it is well that the main use of trade acceptances is centered between dealers and manufacturers. Once they get it to working well in this channel of trade so that it practically takes care of itself then it will be time to turn about and gradually introduce it to the ultimate consumer. Some have already been able to get consumers to use trade acceptances, but the main use of them and the best progress that has been made so far is between manufacturers and jobbers and retail dealers in building material and merchandise of all kinds.

A QUESTION OF KILNS.

At the recent gathering of the clans a group of clayworkers and machinery men were discussing the subject of kilns and burning. One of the interesting questions developed out of the discussion was that of how to get economy in labor and economy in fuel all at the same time with the same kiln.

One man put it this way: That broadly speaking, kilns which make for efficiency in fuel add to the labor of putting in and taking out the material, whereas the kiln construction which makes for labor-saving devices in putting in and taking out the material are as a rule not so economical in fuel. He had specifically in mind the round kiln as compared with the scove kiln, with the round kiln giving efficiency in fuel and the scove kiln furnishing convenience for handling, but being more wasteful of fuel.

It is not the purpose here to enter into a technical discussion of the subject of kilns and their construction. The purpose is merely to put forth an idea and that idea is this: The ideal goal in kiln design should be that which makes for the greatest measure of efficiency in fuel and at the same time for the greatest convenience in getting material into and out of the kiln. The man who can solve that problem satisfactorily will contribute materially to the welfare of the clayworking industry, and should be able to do good business for himself.

THE ANNUAL FIRE LOSS.

Statistics of the National Board of Fire Underwriters for the calendar year, 1916, just made available, show a fire loss aggregating $208,705,340. These figures are said to represent more than 97 per cent. of the fires during the year. Some occurred that are not reported, but it gives a general idea of the actual destruction by fire. To this fire bill must be added the cost of maintaining fire departments, sprinkler systems, etc.

These figures are of particular interest this year because now as never before we need to protect our country against fire loss that we may conserve all our material and energies to further success in our great war. Therefore, it is not only imperative to use fireproof material in building operations, but it is important to make an annual cleanup and contribute in every way practical to lessening our fire losses during the present year.

It should be a year in which proper chimney construction is urgently demanded. The greatest single cause of fire losses was defective flues, and this means that the chimney either is constructed without enough brick, without flue lining, or poorly built and too much mortar was used. A properly constructed brick chimney with fire clay flue lining should never furnish cause for fire. It is important, therefore, that we push flue linings, and at the same time wage a campaign of education on proper chimney construction, the use of more brick and thinner mortar joints and cement mortar for exposed parts.

IT'S SHIPS.

We have finally found the main answer to the congestion and breakdown of our railway transportation system. It's ships, or rather the lack of ships. It is true there has been a bigger volume of freight to move than ever before, and for short periods it would congest the lines, anyway. But after one follows it all through it finally brings out the fact that it is a scarcity of ships and a congestion of freight at loading docks which has crippled the railroads of the country.

This ought to simplify the matter. Plainly it is our duty to lend every energy toward the building of new ships that we may relieve the congestion at seaboard points. This duty is so plain that it should be attended to even at the sacrifice of help at many other industries. Meantime, however, it suggests another duty. That is, the duty to inland transportation by taking some drastic steps to release loaded cars. It may take some time to relieve the congestion at seaboard points, but meantime cars should be unloaded somewhere near such points and released for the use of people in the domestic trade. A little concentrating upon this point will do more than any other one thing to relieve the railway situation, and there is evidence now that some relief of this kind will be coming soon.

When we get this we will find unnecessary a whole lot of suggested ideas about extra demurrage and the public cooperating with the railroads, a lot of stuff that there is really not much excuse for its being injected into the discussion.

INDUSTRY AND THE WAR.

The position of industry in this country and the relation to war activities is just about as clearly understood as conditions in Russia. Several men of talents, authority and nationwide reputation have taken a whack at the subject of essential and non-essential industries and their relation to the war, but when they get through with it we know just as much as we did before.

The two or three things which stand out plainly are: That the people in every line of industry want to keep their industry alive and as active as circumstances will permit. The authorities at Washington are reluctant about expressing themselves as in favor of stopping or curtailing this or that definite industry because it is realized that all are interdependent upon each other in a way. At the same time both the people at Washington and the captains of industry realize that there is not going to be enough help, enough raw material and enough railway transportation to serve all the needs of the country, consequently, some things must suffer.

In the final analysis we will probably discover that the situation will adjust itself, mainly through the shifting of help and energies to those war activities where the demand is more urgent. This will limit both the help and the raw material as well as transportation for other industries, and there will be through this an enforced curtailment in the clayworking industry along with others.

In other words, what we seem to be coming to in all this swapping of ideas and expressing of opinions is a problem of help. In the clayworking industry as in many other industries the activities of the year will be limited more by scarcity of help than from any other one influence. It seems a time, therefore, to concentrate upon how and by what means we may accomplish the greatest measure of useful work to keep industries alive with the fewest possible men with which to do it.

Table of Contents

N. B. M. A. Banquet.......413
Our Nation..............414
Our State..............418
Our City..............421
Our Association..........422
Our Inheritance..........423
Our Jim..............424
Huh-uh! Not Me!..........425
Burning Clay Wares.......426
The Great Duty...........247
Solving the Housing Problem..............428
The Story of Stone.........429
Pave With Brick..........429
The Use of the Shale Excavator on the Clay Plant...430
The Illinois Clay Manufacturers Association Celebrates Fortieth Anniversary..............433
German Atrocities to Boost Loan..............433
Chronology of the Fuel Situation..............434
Building the Lincoln Highway Right..............435
Producer Gas Fired Dryers.436
They Cut Some Ice.........438
United States Fuel Administration to Curtail Use of Fuel for Brickmaking....439
New Jersey Clayworkers to Meet April 12...........474
The Manufacture of Earthenware..............474

CORRESPONDENCE:

Information Wanted Relative to Clay Mining..........439
Seen in New Jersey........486
Louisville Brick News......482

EDITORIAL:

Current Comment.........472
Pros and Con of the Fuel Situation..............472
The Building Outlook.......472
The Progress of Trade Acceptances..............473
A Question of Kilns........473
The Annual Fire Loss.......473
Its Ships..............473
Industry and the War......473
A Brick House Booklet.....474
Editorial Notes and Clippings..............479

MISCELLANY:

Business Good Among the Potteries in the Ohio Valley.482
Reducing the Friction......482
Frankel Connectors to be Marketed by Westinghouse..............487
American and English Income Taxes..............487

INDEX TO ADVERTISEMENTS ON PAGE 488.

NEW JERSEY CLAYWORKERS TO MEET APRIL 12.

George H. Brown, director department of ceramics, Rutgers College, New Brunswick, N. J., and also secretary of the New Jersey Clayworkers' Association, writes that arrangements have been made for a meeting of the New Jersey association April 12, and a program is being planned for morning, afternoon and evening sessions. A cordial invitation is extended not only to New Jersey clayworkers, but as well to those in neighboring states. The New Jersey meetings are always worth while, both from the intellectual and social standpoint. Any one desiring a program in advance may obtain same by addressing Mr. Brown.

THE MANUFACTURE OF EARTHENWARE.

The continued demand for the book by Ernest Albert Sandeman on the manufacture of earthenware, which has been out of print for some years, caused the second impression to be made. The second edition was printed by Grosby Lockwood & Son, of London, and can be purchased through them direct or from T. A. Randall & Co., Indianapolis, Ind.

The book is invaluable to those who are making or contemplate manufacturing earthenware. It is a detailed study of the materials, the mixtures, the preparation, the models and molds, the manufacture, throwing, turning, pressing, casting, handling, sticking up, dishmaking, use of machinery, decoration of the ware, ovens and their construction, saggers and sagger-making, biscuit-placing, biscuit-firing, drawing biscuit ovens and biscuit warehouse, application of the glaze, spurs, thimbles, stills, etc., and the manufacture, the arrangement of glazed ware in saggers, glost-firing, drawing glost and the sorting warehouse, printing underglaze, painting and decorating underglaze, hardening on kilns, printing, painting and decorating over glaze, enamel kilns and firing, glost warehouses and getting up orders, the packing shell, arrangements of a pottery and calculations of cost of production.

The price of the book is $3.00. It is well illustrated, printed upon good paper and excellently bound.

A BRICK HOUSE BOOKLET.

The enterprising clayworkers of the West Coast have gotten out a booklet of plans and ideas for brick houses of moderate cost that is a thing of both beauty and value. The purpose of it is to stimulate the building of homes of moderate cost with brick and other clay products, and to this end a group of West Coast manufacturers inaugurated a competition for a detached house to cost not more than $8,500, such cost to be determined on a basis of cubic contents at 25 cents per cubic foot.

Through the courtesy of the editor of the Architect and under the patronage of San Francisco and Southern California Chapters of the American Institute of Architects, and the San Francisco Architectural Club, the competition was held and it is the prize plans of this contest which make up the feature of the booklet. In addition to about a dozen such plans there are some pictures of excellent modest cost brick homes and illustrations of face-brick bonds and finishes, making the booklet one valuable for reference as well as fruitful of suggestions.

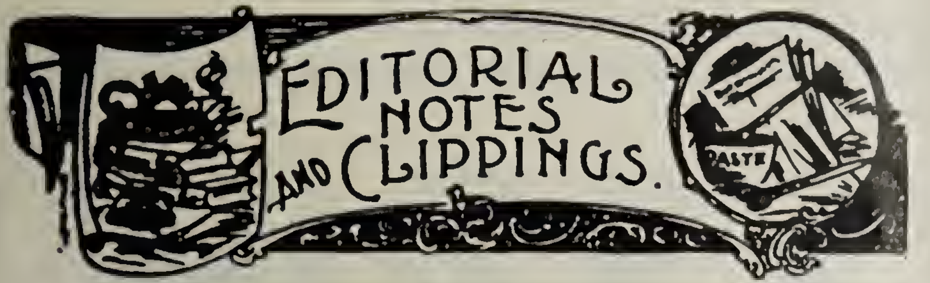
Another splendid idea is the showing of comparative costs of brick and frame, which works out as usual, with approximately 10 per cent. in favor of the frame for first cost, but proves a convincing argument in favor of brick in the final analysis. It is a good work and the West Coast folks are to be congratulated upon it.

PERSONAL MENTION.

John J. Moroney, the "Irish King" of Chicago, Ill., was a visitor at The Clay-Worker sanctum recently. As usual he was in a happy frame of mind, having that day booked an order for the equipment for a brick plant in Hoosierdom. He was accompanied by W. N. Durbin of the Anderson Foundry & Machine Works, Anderson, Ind., his associate in the deed. "John" reports a fine trade in the fire brick line, the plant at Jackson, Tenn., which he now directs, working to full capacity.

Speculation was rife during Convention week as to what had become of George B. Mentz, of Walkill, N. Y., who was absent from the convention for the first time in a number of years. Everyone was sure, something was radically wrong, and it was, for three days before the convention, Mr. Mentz was taken to the hospital where he underwent an operation. We are happy to report that at last accounts he was recovering nicely and expects to be as good as new now in short order.

BUILD WITH BRICK



EDITORIAL NOTES AND CLIPPINGS.

J. M., T. J. and A. K. Gates of Tyrone, Pa., have made application for a charter for the Colonial Clay Co.

The Walston Refractories Company, Walston, N. Y., has purchased a tract of land in that vicinity on which it will erect a plant.

The Advance Terra Cotta Company of Chicago, Ill., will erect a number of new kilns and make some other improvements at their plant.

The Elk Mountain Brick Company of Asheville, N. C., has been incorporated with $50,000 by M. Guy Weaver, George C. Shehan and Fred L. Sale, all of Asheville.

The Table Rock (Neb.) Brick and Material Company started its plants for the season March 5. The company will manufacture hollow tile as well as building brick.

The Coast Fire Brick Co. of Oakland, Cal., has filed incorporation papers. The capital stock is given as $22,000 and the directors are M. Fitzpatrick, C. E. Hall and S. A. Eyre.

The Atlas Fire Brick Company of Los Angeles, Cal., has been incorporated with M. I. Powers, N. B. Harris, E. S. Patterson and M. M. Harris as directors. The company is capitalized at $50,000.

The Cooper Brick Company's plant at Akron, O., was damaged to the extent of $20,000 by fire of unknown origin. The plant had been closed for several months, but was to have been started up again in a short time.

G. W. Thurston, secretary of the Western Paving Brick Manufacturers' Association, with offices at Kansas City, Mo., says that the paving brick plants in that section are very well pleased with the outlook for the coming season.

Henry C. Kafer, a retired brick manufacturer of Trenton, N. J., died at his home in that city recently in his seventy-fourth year. Mr. Kafer had been engaged in the brick business from the time he was a boy until a few years ago, when he retired on account of advancing age.

Fire of unknown origin damaged the plant of the Morey Clay Products Company at Ottumwa, March 12. The loss is estimated at between $30,000 and $40,000. The work of rebuilding was started almost immediately, and as many of the employes as possible will be put to work on the reconstruction of the plant.

The plant of the Warren B. Ferris Brick Co., near Canton, O., has been taken over by the Union Refractories Co. of Columbus, O. The new company has installed new machinery and will produce fire brick and other refractories. W. J. Rinehart is manager of the plant, which will turn out about 35,000 fire brick per day.

John H. Ward, one of the pioneer brick manufacturers of Wilkinsburg, Pa., died at his home March 7. Mr. Ward was born in Ireland, but came to this country when quite young and settled in Wilkinsburg, where he was engaged in the brick business for nearly forty years. He was 86 years old and had not been in active business life for some time.

At the recent stockholders' meeting of the Hallwood Brick and Tile Company, Columbus, O., Hugh Ridenour was selected president, Henry S. Hallwood, vice president, and F. E. Shafmaster, secretary and treasurer. These and C. W. Tanner and John W. Wilson constitute the board of directors. Reports showed the past year had been successful and that the outlook is good. The Ironclay Brick Company, Ruggery Building, sells the output of the plant, which lies just east of Indianola Park.

R. L. Moore of Vernon, N. Y., is interested in a company which is being organized to build a brickmaking plant of 35,000 daily capacity.

W. H. Hill has bought an interest in the Freeport Clay Products Co. of Freeport, Pa., and will take an active interest in the management of the business.

The Dakota Pipe and Tile Co. of Watertown, S. D., has been incorporated with $100,000 capital stock. C. H. Atkinson, Stanley H. Edmunds and S. X. Way are interested.

The Brown Brick Company of Dallas, Tex., recently increased its capital stock, and will use the money obtained from the stock sold to make improvements in its plant.

The Union Brick Company of Iola, Kan., has under contemplation the establishment of a brickmaking plant at Shreveport, La. Frank C. Nicholson is president of the company.

The Tidewater Paving Brick Company's shale brick plant at Catskill, N. Y., recently bought by the Wyomissing Brick Company of Reading, Pa., is undergoing repairs preparatory to opening May 1. It will employ 100 men.

The Woodbridge Ceramic Corporation has been organized at Woodbridge, N. J., to deal in fire brick. The company is capitalized at $30,000, and those interested are N. Peter Jensen, Peter P. Svhendorf and William H. Prallma.

Blue Ridge Enameled Brick Company of Kunkletown, Pa., has been leased by Hoyt & Ward of New York City. They are back of a proposition to rehabilitate the old company at Kunkletown and put it again on an operating basis.

W. H. Thompson, for many years prominent in the heavy electric traction work of the Westinghouse Electric and Manufacturing Co., has resigned to accept the position of works manager of the Fairmont Mining Machinery Co., of Fairmont, W. Va., maker of coal-mining equipment.

The Decatur Brick and Manufacturing Company, Decatur, Ill., has appealed from the decision of the Illinois State Public Utilities Commission of January 29, last, which sanctioned a raise in freight rates on shale and shale products shipped over the lines of the Illinois Traction System.

A new building code is being drafted for Louisville, Ky., as a result of work on the part of the Louisville Brick Manufacturers' Association. It is anticipated that the new one will be quite an improvement on the old one, but it will be submitted to the various building trades, fire underwriters and others interested before it is adopted.

C. F. Kinna, 127 South Third street, Decatur, Ind., advises us that there is a good opening at that place for a brick and tile plant, as brick now have to be shipped in. Mr. Kinna is interested in a tract of land on which there is good clay, which could be purchased at a reasonable price, and can furnish some capital for the enterprise. He will be pleased to hear from any one interested.

The Bradford Pressed Brick Company was given much unnecessary work and obliged to shut down its brickmaking plant at Lewis Run, Pa., as the result of a flood caused during the night when someone pulled the two plugs out of the large water tank used to supply water for the gas engines and for other purposes about the plant. The tank contained about 500 barrels and the water flooded the manufacturing room, the dry pans and the dryer. It was found necessary to put pumps to working to remove the water from the brickmaking plant. The fact that the plant is at present working on government work is the probable reason for the criminal act, and that the job was done by someone unfriendly to Uncle Sam. An inspector from the United States government has arrived

(Continued on page 482.)

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The Third Liberty Loan Can

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EDITORIAL NOTES AND CLIPPINGS—Continued.

here and is conducting an investigation and the guard about the three plants of the Bradford Pressed Brick Company has been increased.

The plant of the Woodburn (Ind.) Brick and Tile Co., which was damaged by fire recently, is being put in shape to start up again as soon as possible.

The H. C. Schneider Sewer Pipe Co., of New Philadelphia, Ohio, has been incorporated for $100,000, by Herman C. Schneider, Ord D. Overlin and Alfred Schneider.

The Spice Valley Clay Co., of Huron, Ind., has been incorporated to mine clay and other minerals. The directors are Joseph G. Phipps, Thomas M. Ryan and Lettie A. Bond.

The brick plant at the penal farm at Putnamville, Ind., has been modernized during the past winter, and is now ready to turn out 30,000 brick a day. The brick, it is anticipated, will be used in the erection of buildings at the various state institutions.

The Westinghouse Electric and Manufacturing Co., announces the removal of its office from Phoenix, Ariz., to Tucson, Ariz. Its representatives, Messrs. J. H. Knost and W. G. Willson, will have headquarters in the Immigration Building at the latter point

E. N. Michel, for many years associated with the Salmen Brick and Lumber Company of New Orleans, La., has organized the Michel Brick and Lumber Co., Inc. Mr. E. N. Michel is president, H. T. Steffee, vice-president; Miss M. E. A. Michel, secretary and treasurer, and G. E. Ferchaud, manager. The offices of the company are located in the Whitney Central Bank Building.

An illustration of the enlarged field of use for vitrified pipe comes from the city of Savannah, Ga., where Chief Engineer Conant is preparing to use 18-inch vitrified pipe as a conduit in connection with the city water plant. This is a gravity line with little or no internal pressure. Engineer Conant says that he has devoted some study to the question of getting a perfectly impervious joint and thus avoid any waste of water. The result of his investigation has been a determination to use the poured grout joints. Forms for the joint material are being constructed by the Wyatt Engineering Co., of Columbus, Ohio.

William C. Vittum, Ottawa, Ill., has entered suit in the Circuit Court asking that the Chicago Retort and Fire Brick Company be restrained from mining coal or clay on the Spicer farm, located east of Marseilles. Mr. Vittum claims that on June 1, 1916, he entered into a contract with the heirs of the late E. H. Spicer, under the terms of which he was to pay them a monthly rental of $25, or a royalty of 3 cents per ton on all coal and 1 cent per ton on all clay removed from the farm. He declares he has offered to pay this rental, but his offers were refused by the defendants. According to the bill, the heirs in September, 1917, entered into a contract with the Chicago Retort and Fire Brick Company, entirely disregarding their contract with Mr. Vittum, since which time the company has removed coal and clay in violation of the Vittum contract.

William E. Sankey, one of the pioneer brick manufacturers of Pittsburgh, Pa., died at his home in that city March 21. Mr. Sankey was born in Pottsville, and moved to Pittsburgh with his parents when he was eleven years old, and had made that city his home for seventy years. When he was twenty-one years old he and his two brothers started in the brickmaking business, in which line he continued until 1881, when because of ill health he retired from active business, leaving the management of the business in the hands of his sons, who now operate under the name of Sankey Brothers, in the same office and plant established by their father. A widow and four sons survive. The sons are William E., Walter W., Thomas H. and John F. Sankey.

BUSINESS GOOD AMONG THE POTTERIES IN OHIO VALLEY.

Industrial conditions among the potteries in the East Liverpool district, as well as throughout the Ohio Valley generally, are improving and a much more satisfactory production of ware is noted in the various plants, according to China, Glass and Lamps. Marked improvement is also observable among the glass factories. Conditions are becoming more settled in both the pottery and glass industries with the advent of better weather. Shipments of ware are now going forward more freely, although there is still room for further improvement. However, compared with the conditions that prevailed for several months past affairs in general are now in much more satisfactory shape all along the line.

LOUISVILLE BRICK NEWS.

Notwithstanding the fact that there are practically no plans so far this season for new home building there is a fair amount of business for local brick manufacturers because of government buildings and other work that belongs in the necessary class and has already been gotten under way.

The Coral Ridge Clay Products Company, which in addition to manufacturing brick both solid and hollow, makes hollow tile, is running busily every day to full time. They are supplying considerable material for additions to the quartermaster's depot over in Jeffersonville, and this with other orders secured from time to time keeps them busy.

One of the most interesting developments of the trade here that has taken place for some time is in the consolidation of the Tyler Builders' Supply Company and the R. B. Tyler Company, which not only serves to unite two strong competing organizations, but will also serve to clear confusion in names that was puzzling to the uninitiated. The Tyler Builders' Supply Company, which was composed of Isaac Tyler and Leo M. Parsons, was consolidated with the R. B. Tyler Company, the new organization taking on the name of the latter concern and occupying the offices and sample rooms at 121 South Fourth street. The R. B. Tyler Company has taken over all the contracts and agencies of the Tyler Builders' Supply Company, which goes out of business so far as its name is concerned, but the personnel of it is now a part of the new organization and will continue as active as ever in the marketing of brick, cement sand lime, crushed stone and the many specialties which enter into building operations.

REDUCING THE FRICTION.

Wonderful progress is being made through the use of ball and roller bearings in the machinery world in reducing friction, and by the same means lightening the burden of the power plant. The progress of these bearings started with the lighter, high-speed machines, but since the coming of the automobile and the truck they have been adapted extensively to more rugged and slow-moving machinery. Apparently they will eventually replace as many of the old babbitted bearings as belts have been replaced by electric motors. Naturally in the rounds the clayworking machinery will come in for its share of this just as it has come in for electric tranmission. Because of the nature of the work required of much of it these bearings have been slow to come, just as the electric motor was slow, but it is one of the interesting tendencies of the day in the clayworking machinery world that is worth following and experimenting with.

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UNDERWOOD PRODUCER GAS BURNING SYSTEM

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Paving, Building and Face Brick,

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And does it Economically and Successfully.

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Then again our Uncle Sam wants you to burn just as little coal as you can. With the Underwood System you can carry out his wishes because you cut down your fuel requirements from 25 to 50 per cent. Yet you are able to produce your normal output. So this reduction in your fuel consumption does not diminish your production but does cut production costs and we hazard a guess that that is what you want. Have you ever thought of this?

It won't cost you a cent to have placed before you in clear, concise, understandable English, all of our facts and data, together with the convincing proofs of some who have eaten of the pudding.

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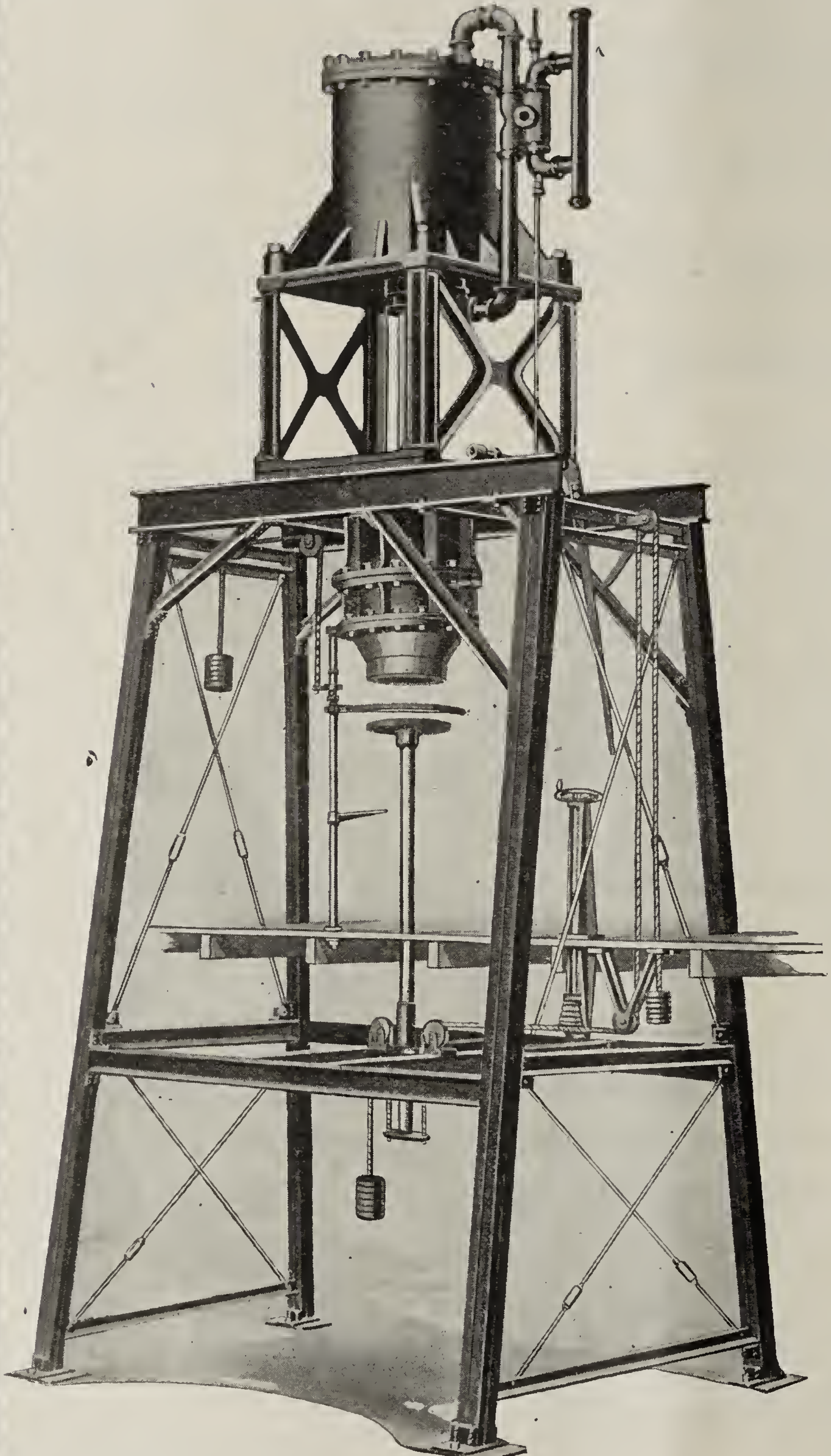

To go OVER THE TOP in the production of FOOD STUFFS will necessitate the systematic drainage of FARM LANDS.

It is the duty of all manufacturers of DRAIN TILE and SEWER-PIPE to put their shoulders to the wheel and help this movement of reclaiming and improving the food producing land of our country.

To do this properly, be sure your equipment is **STEVENSON.**

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FULL CIRCLE SWING THEW POWER SHOVELS

Manufacturers of six sizes of Power Shovels—sixty combinations, built of Thew Standard Machinery Units, Steam, Gasoline, Electric.

IN EVERY conceivable industry where power shovels are adapted you will find the Thew dominates. In one city of approximately one-half million population, fifty Thew shovels are in service. In the clay industry there are over 400. Being pioneer shovel manufacturers such a statement signifies that Thew engineers have given years of study to each particular usage. Research and development problems have been engineered into the very quality of steel used—into every mechanical detail—into full revolving type shovels—into the crowding motion (shipper shaft and horizontal crowd; horizontal crowd with either rack and pinion or chain drive)—into booms-combination, horizontal crowd or straight shipper shaft—into operating mechanism, engines, boilers, roller path, truck, sliding steel wedge blocks and axles—into the very design and style suitable to your class of work.

True exacting effort is embodied in every Thew. The Thew Engineers analyze your problem before recommending the suitable shovel.

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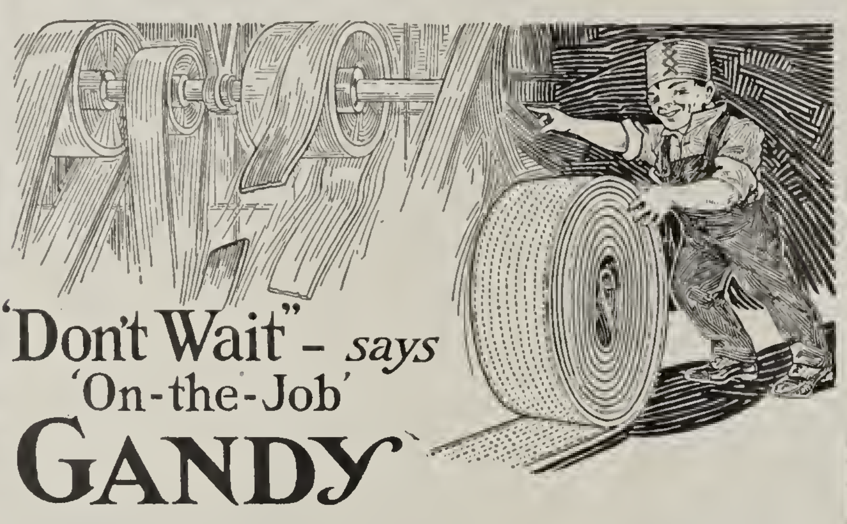

"Don't Wait" - says 'On-the-Job' GANDY

NEVER trouble trouble 'til trouble troubles you is good advice to follow—sometimes—but not in wartime.

If you want to help your country "over there," don't run the risk of serious tie-ups "over here."

Anticipate your production needs—get in your orders for *Gandy*, the original stitched cotton duck Power, Thresher and Conveyor belts—AT ONCE.

You can bank on us to fill your orders promptly, but remember every carrier is loaded to capacity, and government supplies have right of way.

Call on our Engineering Department to solve your transmission problems. We stand ready to give you "up-to-the-minute" service.

Order from your mill supply house or from us direct.

Always look for the well-known *Gandy* trade-mark and the painted green edge.

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749 West Pratt Street
BALTIMORE, MD.
New York Branch, 36 Warren St.

Written for The Clay-Worker.

SEEN IN NEW JERSEY.

SOME STIR IS SEEN about the yards along the Hackensack river, but so far very little more than picking up and beginning repairs upon the ruin wrought by the winter is in progress. Several sheds were wrecked by the snow and wind and will have to be rebuilt, and all will need some patching up. Until this is finished little will be done about making brick. In fact, the cold weather is not yet over, though March has been warmer than March last year. The risk is too great, however, for brick manufacturers in this latitude to undertake much work before the sunshine has actually driven away the snow. Cold weather, with more or less freezing, lasted up to April last year, and it rather frightened those who suffered. They will be careful this spring how they operate before the danger of freezing is passed.

What is to be done in New Jersey this spring is not wholly clear. Labor is very scarce, and much higher wages will have to be paid to get anybody. The state is a congeries of munitions factories and shipyards, both of which pay big wages, and brickmakers cannot compete. Furthermore, if the conservation movement preached by administration officials prevails, then very little building beyond actual necessities will be seen in New Jersey this season—perhaps the least the state has known in years. This is not saying that much building is not needed. It is stating the facts of the conditions that exist, and while something may take place to change the general conditions that are influential now, the outlook is not promising, and brickmakers are not especially anxious to incur large expenses in developing their business, only to find no sale when they get the stock made. War conditions are impressed upon them more and more each day, and in some instances they are about ready to close their plants until after the war is over and business can return to normal once more.

The housing committee appointed by the Paterson Chamber of Commerce has prepared its report. After going over the situation very carefully in this vicinity and meeting with housing committees from other cities, it feels as though it is in position to offer sound advice concerning the building necessities of the section. But it is one thing to discover these necessities and quite another to secure the erection of the buildings actually needed. For example, it found that in the city of Paterson alone 500 new houses or that number of new apartments is urgently needed today. It will recommend the erection of detached dwellings, which will rent up to $40.00 a month; but along with those it would also erect some apartment houses, with apartments of from three to six rooms. Some prefer the three-room apartment, and will pay as high a price for that as they will for a detached house, while others prefer the detached houses; and to insure satisfying all desires, the committee recommends the erection of both. One large manufactory is spending $9,000 a month to instruct new employes in the intricacies of its work, only to have them refuse to stay because no houses are available. The superintendent of one large manufactory has been trying ever since last fall to find a house for himself, and has but recently found one.

In the communities just outside Paterson the same conditions prevail, and much building is necessary if the population is to be provided for. In other instances, they found that employes live long distances from their work, and do not care to move nearer, consequently no new dwellings are required for them. The conditions in and about Paterson are repeated in almost every large center in the state, but housing committees are pessimistic about getting anything done this year, excepting, possibly, some buildings for the benefit of those actually engaged in war work. The government will seek to care for them, but they give no assurance that any others will be served. The situation is not encouraging to either builders or manufacturers of brick and other burned clay products which would be used in construction, but until the scourge of war is driven from modern life it will be quite impossible to do anything worth while. The housing committee realizes this, and while it will urge action, such as the organization of a corporation for the purpose of erecting the needed houses, it has little hope that anything will be accomplished this year. It understands that only one thing can engage our attention now, and it realizes, too, that the news which comes as this is written is so disturbing that such matters as building are likely to be indefinitely postponed, while the attention of every man is given to defeating those who have wrecked the world to gratify a personal ambition.

A portion of the shed of the Homestead Brick Works, at Homestead, was crushed in by the snow. Not all of the brick made last fall were shipped, and a few are still ready for shipment as soon as wanted; but not many are wanted. The ice is out of the Hackensack, and navigation can be undertaken at any time, but few are getting orders that will induce them to ship. Therefore, the sales are nil. Only where contracts are under way are shipments required.

Floating ice was still encountered in the Hudson river early in March, and as yet no barges have been seen. Shipments by rail are much restricted, and sales are small; therefore, not much interest has developed in that section of the producing world. BURTON.

FRANKEL CONNECTORS TO BE MARKETED BY WESTINGHOUSE.

The Westinghouse Electric and Manufacturing Co., of East Pittsburgh, Pa., has recently secured the exclusive sales agency for the United States for Frankel solderless connectors, widely used for joining electrical wires and cables. Manufacturing facilities have been increased by the Frankel Connector Co., in order to care for the new business to be secured through the Westinghouse sales organization.

The Westinghouse Co. will also act as a distributor of Frankel testing clips.

AMERICAN AND ENGLISH INCOME TAXES.

In comparison with the tax levied in England on incomes our own income taxes are moderate indeed.

In England the tax on incomes of $1,000 is 4½ per cent, in America nothing.

In England the tax on incomes of $1,500 is 6¾ per cent; in America, nothing for married men or heads of families, and 2 per cent on $500 for an unmarried man.

In England the tax on an income of $2,000 is 7⅞ per cent; in America nothing for a married man or head of a family, and 2 per cent on $1,000 for unmarried men.

The English income tax rate also increases more rapidly with the growth of the income than ours, a $3,000 income being taxed 14 per cent, $5,000 16 per cent, $10,000 20 per cent and $15,000 25 per cent, while our corresponding taxes for married men are respectively two-thirds of 1 per cent, 1½ per cent, 3½ per cent and 5 per cent, and only slightly more for the unmarried, due to the smaller amount exempted, the rate being the same.

A LITTLE NONSENSE.

His Financial Measure.—Lady (entering bank, very businesslike)—"I wish to get a Liberty Loan bond for my husband."

Clerk—"What size, please?"

Lady—"Why, I don't believe I know, exactly, but he wears a fifteen shirt."—Indianapolis Star.

Watch the Coal Leaks

IN THESE times of increased production, when every pound of coal counts, it is vital to check leaks. Fuel must be conserved.

Brown Pyrometers have proven one of the greatest fuel saving devices in the brick industry today. Brown's record the heat of every kiln. New kilns are fired to the best burns and 90% ware assured.

Write to The Brown Instrument Co., Philadelphia, or to one of their district offices in New York, Pittsburgh, Detroit or Chicago, for full information now.

Brown Pyrometers

INDEX TO ADVERTISERS

Alton Brick Co.................. 408
American Clay Machinery Co.. The........................475-478
American Process Co........... 495
Anderson Foundry & Machine Works......................... 400
Atlas Car & Mfg. Co............. 512
Arbuckle & Co..................... 506
Baird Machinery & Mfg. Co...... 512
Ball Engine Co.................... 403
Barber-Greene Co................ 497
Barr Clay Co., The............... 408
Books for Clayworkers.......... 504
Bonnot Co., The.................. 395
Boss, John C...................... 488
Brewer, H. & Co.................. 507
Brown Instrument Co., The..... 487
Build With Brick.................. 406
Caldwell, H. W. & Son Co....... 492
Carnell, George................... 494
Chambers Brothers Co.......... 411
Chase Foundry & Mfg. Co........ 512
Chattanooga Paint Co........... 492
Chicago Brick Machinery Co,... 404
Chisholm, Boyd & White Co..... 398
Clinton Paving Brick Co........ 409
Danville Brick Co., The.......... 408
Dennis, F. W...................... 491
Dickinson, W. W. Jr............. 410
Didier-March Co.................. 499
Drying Clay Wares............... 500
Dunlap Manufacturing Co....... 494
Eagle Iron Works................. 497
Eastern Machinery Co., The.... 505
Engelhard, Charles............... 493
Fate, J. D. Co., The...........510, 511
Frost Mfg. Co., The.............. 509
Freese, E. M. & Co............... 508
Gandy Belting Co................. 486
Geijsbeek Engineering Co....... 496
Harrington & King Perforating Co............................... 396
Hoehne, Richard B. & Associates 401
International Clay Machinery Co.........................480, 481
Kushequa Brick Co.............. 408
Kushequa Keramic Co........... 408
Lake Shore Shale Brick Co..... 408
Lakewood Engineering Co...... 512
Leary Mfg. Co., W. J............ 407
Lovejoy, Ellis..................... 498
Mantel, Tile and Grate Monthly. 491
Manufacturers Equipment Co., The............................. 483
Marion Machine Foundry & Supply Co.......................... 488
Mathews Gravity Carrier Co.... 396
Mayer, C. P........................ 409
McAvoy Vitrified Brick Co...... 408
Medal Paving Block Co.......... 408
Mentz Co., The G. B............. 495
Metropolitan Paving Brick Co.. 408
Mittler Wire Mfg. Co............ 494
Morgan, F. W. & Co.............. 409
Murphysboro Paving Brick Co.. 409
National Dry Kiln Co............ 496
National Paving Brick Manufacturers' Association............. 408
Ohio Galvanizing & Mfg. Co., The 494
Parker-Russell Mining & Mfg. Co. 492
Phillips & McLaren Co........... 491
Potts, C. & A. Co................. 502
Purington Paving Brick Co..... 409
Ricketson's Mineral Paint Wks. 488
Rodgers, L. E. Engineering Co.. 397
Roessler-Hassslacher Chemical Co., The........................ 493
Scumming and Efflorescence.... 495
Shawmut Vitrified Paving Brick Works.......................... 408
Standard Dry Kiln Co., The.... 412
Steele, J. C. & Sons............. 394
Terre Haute Vitrified Brick Co.. 409
Thew Automatic Shovel Co..... 485
Thwing Instrument Co.......... 497
Tile Underdrainage............. 408
Toronto Foundry & Mach. Co... 495
Trautwein Dryer & Engineering Co............................. 405
Vitrified Paving Brick.......... 408
Wallace Mfg. Co................. 503
Webster & Kincaid.............. 501
Westinghouse Elec. & Mfg. Co.. 402
Williams, C. K. & Co............ 492
Yates, Alfred..................... 492

SEE TABLE OF CONTENTS, PAGE 474.

ORIGINAL Boss SYSTEM Drying and Burning ORIGINAL Boss SYSTEM

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Use either waste heat or exhaust steam.
No live steam. No direct firing.

BOSS SYSTEM OF BURNING BRICK

Applies to all types of kilns and will save HALF in your cost of burning.

Let us save Time and Money for you

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are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.

Why Not Insist on Having Them?

They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.

Red, Brown, Buff, Purple and Black.

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MILWAUKEE, WIS.

Tempers Clay Perfectly—Improves Product—Speeds up Plant

"Rust Special"
Clay Feeder

Will help you get full capacity out of your dry pan, pug mill auger—insure a regular delivery to your off-bearers, and also cuts out labor of two men.
Ask for Rust Bulletin.

MARION MACHINE, FOUNDRY & SUPPLY CO.
P. O. 156, MARION, IND.

NOTES ON THE MANUFACTURE OF EARTHENWARE

By
Ernest Albert Sandeman.

A Practical Treatise Giving Detailed Particulars Regarding Materials, Preparation and Manufacture.

PRICE $3.00.

T. A. Randall & Co., Inc., Indianapolis, Ind.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. LXIX. INDIANAPOLIS, IND., MARCH 12, 1918. Convention Number.

OFFICIAL REPORT OF THE THIRTY-SECOND ANNUAL CONVENTION OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION, INDIANAPOLIS, FEBRUARY 11-16, 1918.*

THE HOOSIER CONVENTION of the N. B. M. A. was a most gratifying success from every viewpoint, save that alone of the number in attendance. As was to be expected, there were fewer present than for a number of years past. War time is not a good convention time, though President Woodrow Wilson, in a letter to Mr. E. V. P. Ritter, president of the Merchants' and Manufacturers' Exchange, New York City, under date of June 16, expressed himself as favoring the meeting of commercial and educational organizations, in order that the business of the country might continue as usual. We quote the President's letter:

"* * * I not only see no reason why commercial conventions should be omitted during the war, but should regret to see any instrumentality neglected which has proved serviceable in stimulating business and facilitating its processes. This is not only not a time to allow any slowing up of business, but is a time when every sensible process of stimulation should be used."

Some of the veterans in the Association saw things more pessimistically and suggested the advisability of not having a national convention this winter, but, after due deliberation, it was deemed best to meet as usual. There are so many unusual conditions confronting the brickmaking craft at this time that it seemed more than ever essential for the representative men in the industry to get together and consider ways and means of meeting the troublesome questions which now confront all producers, and the results of the convention prove the wisdom of this decision. The numerical roster showed an attendance of more than four hundred, including the ladies, which, be it said, is the largest assembly of clayworkers held anywhere in the world previously, excepting at an N. B. M. A. convention, a fact that would-be critics might well consider before passing judgment. As to the proceedings, the following report speaks for itself:

President Fritz Salmen, Slidell, La.

FIRST SESSION.

—Wednesday, February 13, 1918, 2:30 p. m.—

President Fritz Salmen: The Thirty-Second Annual Convention of the National Brick Manufacturers' Association will come to order. We will be led in prayer by Rev. Frank S. C. Wicks, of Indianapolis.

The Opening Prayer.

Rev. Frank S. C. Wicks: Our Father, we need not pray for Thy presence, for Thou art ever with us. We need not pray for Thy Blessing, for if we are striving to do Thy will, if we are dealing sincerely and honorably and justly with our fellows, then we are contributing our share to the great work of the world, and Thou art with us and Thy blessing rests upon us. Amen.

President Salmen: I believe our secretary has something he wants to announce.

Secretary Randall: The next on the program is the singing of America. We will be led by Chaplain Frank Huston, a well-known song writer and singer, too.

The entire audience rose and joined in singing America.

President Salmen: Now, I have the pleasure to introduce to you, ladies and gentlemen, the Mayor of this great city, Honorable Charles W. Jewett, who is going to give us an address of welcome. Before he speaks I want to say one thing. If tonight you find some of the film missing at the theater, don't blame Mr. Randall, but blame Mr. Jewett. (Laughter and applause.)

Mayor Jewett's Address of Welcome.

Mr. President, Ladies and Gentlemen of the National Brick Manufacturers' Association of America:

I am indeed very glad to know that the brick manufacturers' wives are really the progressive women of the country,

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*Copyrighted, 1918, by National Brick Manufacturers' Assn.

for the reason that evidently they have taken the progressive step of attending their husbands while in convention. You are to be congratulated, and I say to you I was also looking after the welfare of your husbands in case you did not come, so, anticipating the theater party this evening, we have gone over and made the film a wholesome one. I do not believe such clippings as have been made will interfere at all with your enjoyment this evening.

I was very much impressed today when I first came in here by meeting down in the corridor a gentleman by the name of Clay, and now I notice that Mrs. Clayton Potts is going to assist in entertaining the ladies. A complete harmony and symphony of names as well as occupation.

I want to congratulate you men upon your thirty-second annual convention. When I was a small boy in Mooresville, Ind., wheeling a wheelbarrow with clay in it at a small brickyard in the summer time, I imagined the brickmaking industry of the country was only a small amount of clay, a kiln and a few fellows working around the place. But I have since learned that the brick industry is one of the greatest industries of America, and the city of Indianapolis is congratulating itself upon your presence here. I want to extend our heartiest congratulations and felicitations upon this, your thirty-second convention. I need not tell you that I have come here to deliver the keys of the city to you. We took a little precaution and opened the doors before you came, so you don't need a key for anything that will make for a good time and a little pleasantry while you are in our city as our guests. I have been called upon to address several conventions recently. I did not realize that our city was such a great convention city until the last month.

The fundamental thing that men and women are interested in today is the great cause of the nation. We have come to a realization at last that the war in which we are engaged is not England's war alone; it is not the war of France, or of Belgium, or of Italy, but since the very moment that Belgium was overrun, since the very time that the Lusitania and the Gulf Light and the Sussex were sent to the bottom of the seas by German submarines and hundreds of American lives lost, it has been America's war, and it is our war today. The war is not 3,000 miles away, but it is here at home, in every shop and factory, on the farms and railroads, and in every avenue of industry where supplies are being made for the soldiers who are doing the actual fighting; it is being fought by millions of people here at home, who are willing to make every sacrifice that is necessary in business, in energy, in every other thing that is neded to win this war. That is the thing that is uppermost in our minds, whether in home life, or business life, or in convention assembled, it matters not. The fundamental and pre-eminent thing as citizens of this country is not what we can afford to do for the goverment, but, rather, what we CAN do and what the government can afford to have us do. We must realize that we are face to face with the greatest problem that has ever confronted our country or any other country—a problem the solution of which will affect the destiny of the human race and the destiny of free government throughout the world.

Have we begun to realize the great importance and the magnitude of the task we are engaged in? I believe American citizens are awake to this responsibility, but we haven't the power, we haven't the imagination to conceive of this gigantic task. We can only BEGIN to conceive what it means to equip an army of two million men to begin with, and then to plan for the equipment of three million more men and the expenditure of nineteen billion dollars in a single year. We have not been accustomed to think of such proportions. Our country has been made up of a peace-loving and law-abiding people, devoted to the development of this country of ours and making life more pleasant—developing the great Western territory and our invaluable natural resources—building up industrial centers, spanning the great continent with all kinds of transportation facilities. We have been busy developing our national life and our country, and have given little heed to a military establishment.

We have had on this continent five great wars. We successfully declared our independence as a nation; we then defended with success our rights on the high seas; we successfully contended against Mexico, the invader on the south; we held intact the Union of States; we went into Cuba and established there humanity's rights and gave to Cuba a free and independent government. All of these struggles combined did not begin to suggest the kind of military establishment we are fighting against today. Germany is recognized as the greatest military establishment that the human mind ever conceived.

Not long ago a friend of mine who had been "over there" came back, and he said he had visited the home of a French peasant. He noticed when he went into the room that the wife was by herself; her husband was at the front. He noticed a dark spot on the floor, and recognizing it as a spot of blood, said: "The Germans have been here, have they not?" She said: "Yes, that spot is where a German captain crushed the head of my twelve-months-old baby." What are we fighting for in this country!

Hon. Charles W. Jewett, Mayor, Indianapolis.

Two little French girls have been adopted by a family in Gary, Ind. These little children have only their left hands—the right hand was cut off at the wrist by German soldiers.

What is America fighting for? She is fighting for human rights, for Christian principle, for democracy wherever there may be civilized peoples dwelling together. She is fighting to make such brutal atrocities as these forever impossible of recurrence. (Applause.) We cannot hear the roar of cannons; we do not see the ambulances with their wounded; we do not see our soldiers back from the front with legs and arms gone; we do not see the long list of casualties. It is true that they are fighting across the ocean. We feel that they will never come over here. But we cannot know the future. We know not what a year or two years may change for America. We know that if France or England should weaken or fall, America would be the next target for the scientific destruction which the kaiser is executing. And the only reason there is no fighting here today is because France, the hero nation, and England and Belgium and Italy have been fighting for three years a war in which we should have been their ally. It is America's war today just as much as it is France's or England's war.

When our government plans and maps out the collection and expenditure of nineteen billions of dollars in a single year, it means a task the parallel of which we have never dreamed of in our country. When we stop to think of a billion dollars, we cannot conceive of its magnitude. A million dollars is more thany many of us have been accustomed to thinking of. Nineteen billion dollars reduced to dollar bills would make a carpet around the equator of the globe thirty feet wide. Reduced to twenty-dollar gold pieces, laid side by side, it would extend around the globe. It is more money than has ever been expended for all of the railroad systems in this country.. And if we had to build all of our railroad systems in a year, we would think we could not possibly do it.

This is what the government is saying to us as individuals. We must be impressed with the magnitude of the government's task. We must follow the plans for conservation that the non-essential things be eliminated; that food be conserved in order that our allies and our own soldiers may be fed, clothed and equipped. Every time we use a nonessential thing, whether it be an article of clothing, some food luxury, or anything we can get on without, we are creating a demand at that very minute upon the food supplies and upon the factories of the country; we are demanding that the man power of this country be taken from the nation's work and used for our work. If the government is going to carry out what it has undertaken to do, spending nineteen billions of dollars in equipping and feeding an army, we must all step aside while the government does this big task. We can save, we can conserve, we can lend our money to the government. These things every one can do. We are going to make possible the safety of the boys who are carrying the guns when we do these things religiously, and not until then. After all, these two million American boys, representing the flower of American manhood, are making the supreme sacrifice; they are living their devotion to the nation. We have a covenant with these boys. Many of them are going over there into "No Man's Land," and they are going to stay until "it is over, over there." Many of them will not come back. Only yesterday we had word of the death of one of our Indianapolis boys. He is the first to give the "last full measure of devotion"—Indianapolis is proud of him. We trust many others will not meet the same fate he has met. We have a covenant with every one of these boys. That covenant is to be here in America, "carrying on," as they say over in England, "carrying on" the work that is necessary here to help them win our victory.

Charles H. Bryan, Detroit, Mich.

I notice on the program one of the topics is, "What Can We as Brick Manufacturers Do to Win the War?" I know the spirit of this convention is one of patriotism. Business is going to suffer during the war. The man who has thought out the problem—the man who keenly realizes and feels the obligation we owe to our country and to these two million boys—is not thinking of making money now. No, he is thinking of holding himself in a position where service of the highest type can be rendered so America can win this war and settle this question as quickly as possible. (Applause.) There is not a business man but feels the same kind of patriotism that inspired these boys to offer their lives to their country, who would not rather see his business suffer a thousand times than to have his business stand in the way of the efficiency and safety of our soldiers while they are fighting for humanity and for America across the seas.

I know you are a patriotic, peace-loving body of men. We all love peace, but we do not shrink from war. We are not too proud to fight for the right. There is a responsibility that rests upon every one of us. We each have our place in this great problem. It is only by the combined efforts of the hundred millions of people in this country that we are going to win this war. Business does not matter; personal rights and personal liberty and all these things we have held sacred so many years are well established in this country. The great thing now is the establishment upon earth of humanity's rights, the institutions of free government, and those things which must assure universal peace in the days to come.

I believe in this great country of ours, with all its great resources, its great undeveloped wealth, its great banking interests, its great commercial centers, and its resources of unmeasured wealth. I believe in its millions of people who have come here—who have been poured into this great melting pot, America. I believe in the people of the old countries, who have come here to breathe in the air of freedom and liberty and make of themselves real American citizens. I believe the 141 years of our history has been made for a purpose. I believe that, as sure as there is a Creator who presides over the destiny of men, America is at the climax of her history, and the Divine Almighty has brought up this mighty nation of strong people for the very crisis that presents itself to the world today. The mission of this new republic is at hand. The American ideal will be indelibly printed on the world. We are going to rise to that responsibility; we are going to rise to that ideal. We can only do it when every citizen who is proud of his citizenship takes an invoice of himself, measures what he can do and then gives the full measure of service and devotion.

This is not a time for men and women to criticize. This is not a time for us to have partisan feelings. This is not a time for us to have religious creeds or prejudices of any kind. This is one time in our lives when, as Americans, we must stand side by side, shoulder to shoulder, and back up that great leader, our Commander-in-Chief, our President, Woodrow Wilson, (applause) to the end that we will win the war. There is not a man here who is at the head of a big business who could reorganize his business in a single year and double it and treble it and then repeat the expansion over again and not make mistakes. Human beings are always making mistakes. And when we think of the gigantic task these men in Washington are carrying on, we must be a patient people, a loyal people and a co-operating people, no matter what our political faith, because America is in the balance. It is the war of the American people, and America must consider it that way. We must give our loyalty to the limit, even if it takes every drop of American blood and every dollar of American finance. (Applause.)

Again I want to congratulate you upon your thirty-second annual convention. It means something for an association to have existed for so many years. I greet you on behalf of the citizens of Indianapolis, and sincerely trust this will not be your last appearance in our city. (Applause.)

President Salmen: It was anticipated that Mr. Elisha Kane would be here to respond to the very inspiring address of the Mayor, but he has been detained by very important business, and Mr. Morris E. Gregory, of Corning, N. Y., has been asked to tell the Mayor how much we appreciate his greeting.

Response of Mr. Gregory.

M. E. Gregory: Mayor Jewett, on behalf of the National Association of Brick Manufacturers of the United States, here assembled, I wish to thank you for these words of welcome to this body. I understood from Mr. Randall that Mr. Kane had arrived, and so I had dismissed from my mind the idea that I was to respond to His Honor. I believe I speak truthfully when I say that the brickmakers of this land are true and loyal to the government to a man at this time, and if the manufacturers here assembled were asked to do so, I believe every one would donate his property to the government for its use during the war, irrespective of any profit or reward. We are in this war to win, and anything that we can do we will gladly do at this time. Unfortunately, our business has been affected very much as the result of the war and very few brick manufacturers can show a profit on the right side, yet we are not here to complain or grumble. We are ready and willing to do our share in any way possible to bring about the result for which we are all hoping, namely that we may see peace and prosperity to all our people and those included in the great conflict. The manufacturers here assembled represent a noble craft, who are furnishing a fireproof and everlasting building material, which has been used for centuries in the finest buildings of the world, and we are glad to note that your city includes a lot of buildings which show the handiwork of the clay manufacturers. We believe that we are doing more to build up and beautify the country than any other class of manufacturers, and trust that when we have left the city you will feel that it was truly a pleasure to entertain the brick manufacturers of the United States. (Applause.)

Secretary Randall: With your permission, Mr. President, we desire to introduce a little innovation here. Chaplain Huston has consented to favor us with one of his songs.

Chaplain Frank Huston: Your enthusiastic response to the patriotic words of our Mayor assures me that we are in the hands of patriotic men. The song which I have been asked to sing was written to counteract the song, "I Did Not Raise My Boy to Be a Soldier." A great many people hugged that song to their bosom, and I felt sure that that song did an irreparable injury to our country, so I wrote this song, "I Tried to Raise My Boy to Be a Hero." That does not always mean a soldier. I believe all soldiers are heroes, but I am sure there are very many other heroes who never saw a battlefield. In fact, I rather feel I am facing an audience of heroines and heroes this afternoon.

President Salmen: W surely do thank you, Lieut. Huston for this treat. We have all enjoyed Brother Randall's innovation. Mr. Secretary, will you announce the next on the program.

Secretary Randall: The next on the program is the annual address of our worthy president, Mr. Fritz Salmen:

PRESIDENT'S ANNUAL ADDRESS.

FRITZ SALMEN, SLIDELL, LA.

Ladies and Gentlemen:

Since our last meeting in the world's largest city, our great country has been drawn into the world war, and for a while, some feared we would have to suspend our annual convention. But, after due deliberation, it was decided to keep our association work fully up to date; therefore, we are delighted to have been invited to meet here in Indianapolis, the beautiful home town of our beloved secretary.

Since our country has become involved in this world's greatest war and many of our members are contributing in different ways for the battles for liberty and self-government; not only have their sons been enlisted and are now in the trenches of France, but, alas, many of our noblest daughters have volunteered themselves and gone to France to nurse our boys. These are the greatest gifts that humanity can give. I feel assured that every brickmaker and, especially every member of this association, stands at the head of the list, ready and willing to assist our government in every possible way, thus showing our unfaltering loyalty to our President and to our country, where genuine freedom has been secured and maintained to all its citizens. Let us not only do our bit, but cheerfully do our all.

Our country is now undergoing great changes in many respects, and all industries must be fully alive to these new conditions, therefore, it behooves us brickmakers more than ever before to keep in touch with these new methods. It will require united efforts of every craft to have its best representatives protect their interests, and thereby keep abreast of the times. We, as burnt clay manufacturers, cannot afford to pass these changes unnoticed. Unfortunately, brick manufacturers have been exceedingly slow in taking advantage of team work; however, I am glad to report some improvement in our Southland. Some few months ago, hollow tile manufacturers organized, the organization embracing in its territory all of the Southern states east of the Mississippi River, and I am informed that the members of this association are highly pleased with the results already obtained. Again, in some sections, manufacturers of common brick met and organized. I was invited to attend their meeting at Shreveport, held on the 15th of January, but could not be there, so this pleasure has been deferred to their next convention. These brick manufacturers come from Texas and Louisiana, and, according to several letters received from them, their coming together and meeting their immediate competitors has been a pleasure to each; they are very enthusiastic and already report better working conditions by reason of the exchange of ideas and experiences. They also praise the social feeling which has been created by their gatherings, and seem to be loyal to their association. My company belongs to several organizations in other branches of manufacturing, and every one of them is highly beneficial to us.

President-Elect George H. Clippert, Detroit, Mich.

As never before, is the present time one of co-operation, and those branches of manufacturers who meet frequently seem to be more successful, for by meeting oftener they are enabled to discuss problems of every nature and decide how best to overcome difficulties of every description.

My personal experience of attending our conventions has proven very profitable to my company, for mingling with brother brickmakers and hearing the various papers and discussions gave us new ideas with the brother brickmakers' experiences.

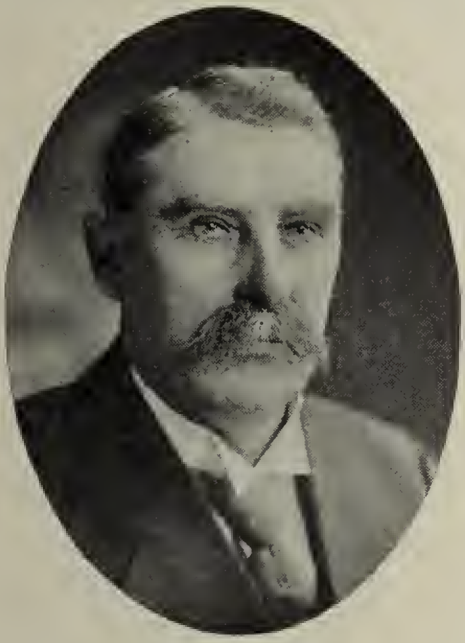
The business end, though, is not the only benefit we enjoy from these annual gatherings. There is the social side, which appeals to us all, as well as to our wives and daughters. They look forward to these meetings with great expectations, and return to their respective homes full of enthusiasm, which is a great help to all who bring their ladies to our conventions.

Now, I do most earnestly urge all brickmakers to become members of associations, and do hope to see our national association enroll every brickmaker in our land as an active, wideawake and loyal supporter, making it a rule to attend all conventions and pay the respective dues promptly. Then, and only then, can common building brick manufacturers expect similar results as are enjoyed by other crafts. Ever since I became a member of this association, in 1900, I have noticed that the most successful brickmakers in the whole land have been active members and attend our conventions regularly, entering into the discussions.

As to the financial conditions, and all other activities of our association, our treasurer, who never fails to show a surplus, will doubtless keep up the good reports, and our beloved secretary will inform you of all the work done. I know he has been watchful of our interests and kept in touch with the government's new policies affecting our interests, and it gives me pleasure to commend him for this work.

Permit me to refer to one of your loyal members, who has always attended the conventions of this association and gave its members real, scientific information, but who could not meet with us today, as he has enlisted in this country's service as an officer of our army and is giving his all to help whip the Kaiser. This person we all know and love, and his name is Prof. Edward Orton.

I again desire to thank you all for the highest honor within your gift, bestowed upon me in selecting me as your presiding officer. It is true I have not been very active and beg you to overlook all my shortcomings. I shall always cherish this great honor and hope henceforth always to be found amongst the loyal and zealous supporters of your association. (Applause.)



First Vice-President J. W. Robb, Clinton, Ind.

President Salmen: We will now hear the report of our faithful treasurer, Mr. John W. Sibley, of Birmingham, Ala.

TREASURER'S REPORT.

JOHN W. SIBLEY, BIRMINGHAM, ALA.

To the Officials and Members of the National Brick Mfrs. Assn.:

I beg to hand you herewith my report of receipts and disbursements for the year just ended, and am glad to state that notwithstanding the war conditions we have pulled through with a substantial balance in the treasury.

At the risk of incurring the disappointment, if not displeasure, of my good friend Anthony Ittner, I will submit this report without the usual "darky joke," but in lieu thereof submit a few reminiscences of the former convention held in Indianapolis in 1891, which marked the beginning of my membership in the National Brick Manufacturers' Association, and I am also pleasantly reminded that our fair assistant secretary made her official debut at the same time.

That was the first convention of any character I had ever attended, coming as quite a young man, when my dome was not so bald or grey. Our esteemed friend, Jesse Adams, of beloved and sainted memory, was elected president at that convention, and he handled the proposition in the same splendid manner in which he later conducted the speakership of the Indiana Legislature.

I remember that the clergyman, who was scheduled to open the convention with prayer, failed to arrive, and at the suggestion of "Mark Twain" Flood of Philadelphia, Brother Eudaly was called upon to do so, which he did in his usual acceptable and reverent manner.

At this convention I formed many acquaintances which ripened into friendships that have been a real joy in my life and will always be bright and hallowed spots in my memory.

I am filled with a feeling of sadness as I think how many of those have "passed over to the other shore," such as the venerable Captain Crafts, R. B. Morrison, Jesse Adams, Charley Merwin, William Alsip, Cyrus Chambers, C. W. Raymond, D. V. Purington, T. B. McAvoy, J. W. Penfield and others, which time precludes my calling by name.

These, and many other splendid clayworkers still living, laid the foundation in those early days of this strong association, which has grown in usefulness with the passing years, and developed a number of subsidiary associations which have attained a position of supremacy and usefulness to the industry of incalculable benefit.

It does seem quite "a joke" to me, as I recall the complacency with which I read my first paper, entitled "Brickmaking in Alabama," and while I now know that I disclosed at that time how little knowledge I had of the art of brickmaking, I will never forget the kind reception that was given me by the convention, and the paternal pat of encouragement on the back at the hands of dear old Jesse Adams.

That was also the occasion of my first introduction to the famous pow-wow, which was thoroughly enjoyed, but in the general evolution of things upward, it has been transformed into our smokerette at which the ladies are present and lend charm and grace to the occasion, not to say proper restraint.

I have only missed two conventions in the twenty-seven years that have intervened since the former convention held in this delightful city, and I am looking forward to a most delightful session here, as I trust will be the case with each and all of you.

Respectfully submitted,
JOHN W. SIBLEY, Treasurer.

RECEIPTS AND DISBURSEMENTS ACCOUNT THIRTY-FIRST ANNUAL CONVENTION THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION, MARCH 6 TO 10, 1917.

RECEIPTS.

Balance in treasury, account 1916	$997.53	
Paid for research work, U. S. Bureau Standards	250.00	
Net balance in treasury		747.53
Renewal fees, account 1917	$2,095.00	
New membership fees, account 1917	405.00	
Reports, pamphlets and badges sold, etc	25.50	
Total income		2,525.50
		$3,273.03

DISBURSEMENTS.

Paid for convention program, mailing, etc., per voucher	$142.00	
Paid for convention report, mailing, etc., per voucher	325.70	
Paid for membership Am. Soc. Testing Materials, per voucher	15.00	
Paid for membership Chamber Commerce two years, per voucher	30.00	
Paid for lantern operator, slides, etc., per voucher	65.55	
Paid for miscellaneous printing, etc., per voucher	194.30	
Paid for engrossing certificates, per voucher	5.20	
Paid for postage, telegrams, expressage, etc., per voucher	189.60	
Paid for rosters, per voucher	56.20	
Paid for clerk hire, per voucher	300.00	
Paid for secretary's traveling expenses, per voucher	250.00	
Paid for assistant's annual allowance, per voucher	200.00	
Paid for secretary's annual allowance, per voucher	600.00	
Paid for convention expenses, per voucher	26.75	
Total disbursements		2,400.30
Balance in treasury		$872.73

RECAPITULATION.

Balance in treasury, account 1916		$747.53
Total receipts, 1917	2,525.50	
Total expenses, 1917	2,400.30	
		125.20
Balance in treasury, 1917		$872.73

President Salmen: Gentlemen, what is your pleasure in regard to this report?

W. E. Dunwody, Macon, Ga.: I move it be received and spread on the minutes.

William Conway, Philadelphia: I second the motion.

Carried.

Messages from Absent Members.

Secretary Randall: Mr. President and gentlemen of the convention, I have some telegrams and letters here from absent members. The first which I will read is from our ex-president, W. H. H. Rogers, who, though no longer engaged in the brick business, is with us heart and soul.

New York City, N. Y., Feb. 8, 1918.

Dear Randall:

I wish it were possible for Mrs. Rogers and myself to be with you the coming week and renew old acquaintances and meet new faces as they appear from year to year. We were speaking last night of the coming convention, and the friends we had met during the last twenty-nine years. I am enclosing check for membership dues, presume the amount is the same as last year. I trust the convention will be most successful, notwithstanding general conditions throughout the country.

Mrs. Rogers joins me in kind remembrances to you and family and all inquiring friends. I beg to remain

Cordially yours,
W. H. H. ROGERS.

Secretary National Brick Manufacturers' Association, Claypool Hotel, Indianapolis:

Regret exceedingly that I cannot be with you. Important matter I cannot neglect holds me here. Regards to everyone.

Belleville, Ill., Feb. 13, 1918. WARREN ITTNER.

T. A. Randall, Secretary, National Brick Manufacturers' Association, Claypool Hotel, Indianapolis, Ind.

Regret impossible to attend convention. My brother will represent us.

H. J. FLOOD.

T. A. Randall, Secretary, National Brick Manufacturers' Association, Indianapolis, Ind.

Owing to the illness of my wife I will not be able to attend convention. Cancel reservation. I earnestly hope the attendance at National Convention will be large and enthusiastic.

Give my regards to any inquiring friends.

Columbus, O., Feb. 10, 1918. H. P. JENKS.

Friend Randall:

Inclosed please find my check for $7.00. $2.00 to pay for a continuance of the old reliable Clay-Worker, and $5.00 association dues.

It's with regret I read an article in a trade paper relative to the editor's ideas supposed needs of the clayworkers. He says something about politics. It don't take a Solomon to foresee that if a new office is created with a high salary attached, we would have politics sure enough in the camp.

The writer of the article seems to have put acid in his ink. I wish I were well enough to tell you in detail (I got out of a sick bed to write this letter). I say I wish I were well enough to enumerate in the detail the benefits I have for more than thirty years received from my membership in our Association, and as a subscriber to your valuable journal.

I started with a blind mule as motive power to operate a home-made mud milll. Now we have a plant that is up to the minute, using steam and electricity. Plenty of business. Never owe anything. Plenty of real cash on tap at the bank.

This fine condition is due largely to the valuable information obtained from your journal and from papers read at the conventions. No one man in America has done so much for the clayworkers as Theo. A. Randall, and I thank you.

I hope that the coming convention may be an unbounded success. With many kind wishes to your dear ones and "Tae yer ainsel,"

I am yours truly,
Milledgeville, Ga. J. W. McMILLAN.

Election of Officers.

President Salmen: The next in order is the election of officers. We will now have nominations for president.

Charles H. Bryan, Detroit, Mich.: Mr. President, ladies and gentlemen of the National Brick Manufacturers' Association, it is a pleasure for me to present Detroit's candidate for president, and I am not going to in any way eulogize him, for it is not necessary, except to say he is the highest type of patriotic American. We have a duty to perform as members of the National Brick Manufacturers' Association. I was somewhat against holding a convention this year, or any banquets, or anything of that sort, but I am mighty glad to have come to Indianapolis, and to have heard the stirring address of the Mayor. You all have something to do this coming year. Like nearly all of the rest of the women of the country, my wife has been doing a lot of knitting lately, and she said to me the other day, "Why is it I feel so contented while knitting?" I said it is because you feel that you are doing something for someone that is doing something for you."

Gentlemen of the convention, the man who is going to be your president this next year has made the supreme sacrifice of his life, and the last that he can do. His boy, whom many of you met while at the Detroit convention, is somewhere over in France fighting your fight and my fight. There is one thing we can all do, and that is to strike at every one who is going about spreading this German propaganda. This is one of the greatest curses we have to fight against in this country.

Second Vice-President Wm. K. Hammond, New York, N. Y.

It is my privilege to present to you my very good friend, George H. Clippert, of Detroit, for president of this association. (Applause.)

John T. Hummert, Quincy, Ill.: I second the nomination.

H. H. Stafford, Augusta, Ga.: I move that the rules be suspended and the assistant secretary be instructed to cast the unanimous ballot of this convention for Mr. George H. Clippert for president.

Seconded by many and carried.

President Salmen: I am glad my friend is elected. We will now have nominations for first vice-president.

Douglas F. Stevens, Cayuga, Ind.: Mr. President and gentlemen of the convention, I take great pleasure this afternoon to present as candidate for the office of first vice-president of the National Brick Manufacturers' Association a man who is not only a veteran clayworker in the state of Indiana, but a man who has rendered most valuable service in all organized work among clayworkers for a great many years. He has long been prominently identified with this association and also with the National Paving Brick Manufacturers' Association, and especially in the traffic work of that association has rendered valuable service; and, while other duties have taken a part of his time recently, he is still sufficiently interested in making brick and other clay products. He served us last year as our second vice-president, and it is therefore with great pleasure that I present the name of J. W. Robb, of Clinton, Ind., for the office of first vice-president.

C. A. Pritchard, Indianapolis, Ind.: I second the nomination of Mr. Robb and move that we follow the same course as in the election of our president.

Seconded and carried.

President Salmen: We will now have nominations for third vice-president.

M. E. Gregory: Our third vice-president, Mr. W. K. Hammond is not here, but it gives me pleasure to present his name for second vice-president—first, because he comes from New York City, and we New Yorkers always like to look after the New York people; and, second, the association will be benefited by his election. Therefore, I take more than usual satisfaction in nominating Mr. Hammond, and if there are no other nominations I would move we suspend the rules and instruct the assistant secretary to cast the unanimous ballot for Mr. W. K. Hammond, of New York City, for second vice-president.

Jotham Post, East Williston, L. I.: I second the nomination of Mr. Post, and also second Mr. Gregory's motion. It was my privilege last week to call on Mr. Hammond, and he then told me that on account of a wedding anniversary he could not leave home this week. He wished me to express his best wishes and kindest regards to all the members of our national association, and say to you he hoped to meet with you next year, and wished us a very prosperous and happy convention.

Third Vice-President W. E. Dunwody, Macon, Ga.

Motion carried.

President Salmen: Mr. Hammond has been duly elected, and now we come to the third vice-president.

H. H. Stafford, Augusta, Ga.: I come from the sunny South, and we are sure delighted after the newspaper reports we have recently had of the weather in the north, that you have prepared for us such a warm welcome. I desire to present for the office of third vice-president the name of my hardest competitor, one of the youngest and most active brickmakers in our section of the country, Mr. W. A. Dunwody, of Macon, Ga.

John W. Sibley, Birmingham, Ala.: It certainly gives me pleasure to second Mr. Dunwody's nomination and to move that the assistant secretary perform the same duty in casting the unanimous ballot for Mr. Dunwody.

Several seconded Mr. Sibley's motion, which was carried.

President Salmen: This finishes the list of vice-presidents, and we now come to the very difficult part, the selection of a secretary for the ensuing year.

R. G. Eisenhart, Horseheads, N. Y.: Mr. Chairman, ladies and gentlemen, about thirty years ago I was engaged in mercantile pursuits, and sometimes merchants are subject to fever which is usually termed "outdoor fever," and there is no cure for it unless they get in some occupation that they can spend a part of their time outdoors. The fever struck me, and very severely, but I had good sense enough to know that I could not perform two jobs at the same time, so I got out of the one and into the other, and it took me two years to find what I thought suited me. I found it at Horseheads, N. Y., close to my friend Gregory, and I bought what was then generally termed a brickyard, and it was a dandy. It was a good one, and I found there was plenty of outdoor exercise; in fact, there was a bunch of it. I enjoyed it immensely, but it was only a matter of time until I realized that it took more than outdoor exercise to make a living for my family, so I began to figure what to do. Among other things that I took over with the plant was an old desk in the office, and in that desk I found the real thing. It was a copy of The Clay-Worker. I looked through its pages very carefully, and I learned for the first time that there was such a thing as the National Brick Manufacturers' Association. I searched a little further and I found this association was going to have a convention in the Hoosier city of Indianapolis. I hastened to the house and told my wife what I had found, and she said: "Daddy, that is all right. You go. I will fix you up a big basket of lunch and help you get started." (Laughter.)

. In those days I was not much accustomed to riding in Pullman cars. I did not like them; they were too confining, and we had two classes of tickets, first class and second classs. I bought a second-class ticket and landed here in Indianapolis on time. I did not stop at the Claypool; I do not remember what "pool" it was, but I do remember that I stopped at the cheapest hotel. I started out to find the convention hall; I got the directions from the cop at the corner. I struck out and found what I was looking for, and I found outside the hall, looking around, a nice-looking young man, and he looked at me and said: "I am a stranger here from the South, and I am looking for the place where the National Brick Manufacturers are holding their convention." I replied: "That's what I am looking for, this is my first convention." He said: "Let's shake; this is my first convention, too; my name is John W. Sibley, from Alabama." I told him my name and we locked arms and went to the convention hall. He asked me how long I had been in the business and I told him six months, and he said, "I beat you; I have been in a year, and I have the honor of reading a paper on 'Brickmaking in Alabama'." I stayed close to my friend Sibley, and while I don't remember just what the paper was about, I know it was a good paper, because everybody laughed. (Laughter.)

To get at what I was going to say, I have attended every convention ever since, with the exception of one. I missed Atlanta, Ga. I kept on exercising, and what I have learned during all these years of clayworking and the benefits I have received from the National Brick Manufacturers' Association are what enabled me to continue in the game, and I am glad after all these years that I can return here to Indianapolis. There isn't any place in the world I would rather be than here, and there is only one thing that could add to my happiness, and that is if I could have my son and daughters and my fifteen grandchildren with me.

It is to my friend, Theodore Randall, that I owe a whole lot; if I have made any success it is really due to him that I have got along, for he has held this association together. The thing I got up to do was to nominate Mr. Randall for secretary, and I hope somebody will help me out of this dilemma, and get up and move that his election be made unanimous and that the vote be cast by the assistant secretary. (Applause.)

John W. Sibley: Just to show you I am game and that there is no hard feeling in my heart, I second the nomination of my good friend Randall, and move the assistant secretary cast the ballot of this association for Theo A. Randall for secretary.

Seconded by many.

President Salmen: Now that we have settled with Mr. Randall, we have got to have a treasurer. Who is going to nominate a treasurer?

W. D. Richardson, Columbus, Ohio: I was looking around hoping someone was scheduled to make that nomination. I remember Mr. Sibley at the first Indianapolis convention, and I do not remember that I ever nominated him for treasurer, and I think it is about my turn to do it. Especially after what has been said by other members here, especially Mr. Eisenhart. I am pleased he nominated Mr. Randall and told you at the same time how long Mr. Sibley had been coming to these conventions, for we want a man for treasurer who is and always will be loyal to this organization. Mr. Sibley always manages by some means or another to make a favorable report and always shows a balance in the treasury. Under ordinary conditions in life I have never favored a treasurer being re-elected, but with this association I am decidedly in favor of continuing Mr. Sibley in the office of treasurer. Therefore, Mr. President, I am pleased to nominate Mr. Sibley as treasurer of this association for another year. (Applause.)

M. E. Gregory: I second the nomination of Mr. Sibley and move the assistant secretary cast the ballot of this convention for Mr. Sibley for treasurer.

President Salmen: The assistant secretary has cast the ballot, she says, "with pleasure." This finishes the election of officers, don't it, Mr. Secretary.

Secretary Randall: We usually at this time nominate a member for the Committee on Technical Investigation. As you will all see by turning to page 22 of the program, this year the member whose term expires is Professor, or rather Major, Orton. I was in Washington recently and spent an evening with Major Orton, who, as most of you know, is now in the service of our country. Of course, he will never lose interest in the clay industry, but until he is through with his military service he will not be able to work much for the association. I think he is too valuable a man in technical work to be lost to us, even though he be absent. I take great pleasure in nominating Professor Orton to succeed himself on the Committee on Technical Investigation. (Applause.)

R. G. Eisenhart: I second the nomination and move it be made unanimous.

Seconded by many and carried:

Secretary Randall: I also want to move that as an organization we wire to Major Orton, expressing our regret that he is not with us and that we desire him to continue with us on this Committee on Technical Investigation, and to wish him Godspeed in his work.

President Salmen: I think we may take that by consent, Mr. Randall, and will depend on you to send Major Orton the telegram. I think we can now proceed with the installation of officers, and I beg to introduce to you all your newly elected President, George H. Clippert, of Detroit. (Applause.)

Installation of Officers.

George H. Clippert: Mr. President, ladies and gentlemen, I thank you for the very high honor you have conferred on me today, and I accept the same with a very great deal of pleasure, because in the first place the membership of this organization is made up of the very best people both in the United States and Canada; second, this association has afforded me an opportunity of meeting with and forming acquaintances and making some very true loyal friends among the members, such as our worthy retiring president, Mr. Fritz Salmen. Another reason is, I received my election in the home city of our secretary, whom I look upon as the very foundation of this organization, and I consider it a great favor to be elected in his home city.

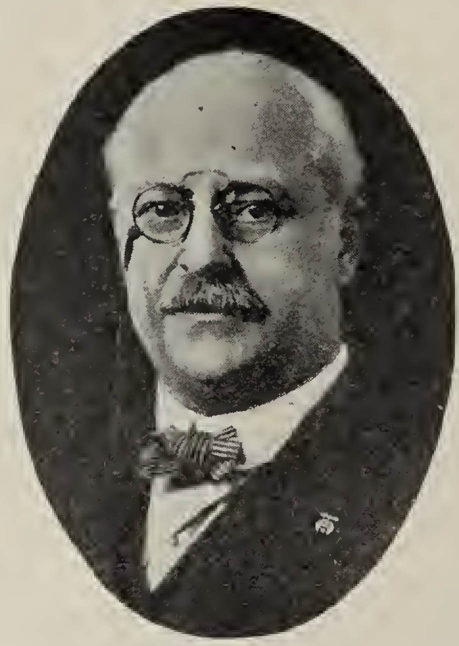
I also want to take this opportunity to thank my friend, Mr. Bryan, who three years ago kindly presented my name in Detroit for your kind consideration, and he has attended the three conventions since to see that I did not fall by the wayside.

It has been mentioned here today that we are in the midst of a great war, both by the Mayor and our retiring president. It is true, but that war is coming to an end, and we all hope very soon, and when it does come to an end we are going to have a better world and better people and a better and larger organization, without any doubt. (Applause.)

I do not know that I have anything further to say right now, and I know that if I want to follow in the footsteps of my predecessors, Charlie Deckman and Mayer and Salmen, I will have to be very precise and prompt in presiding over the sessions of this convention. Mr. Randall, will you bring our first vice-president to this platform?

Secretary Randall: With great pleasure, Mr. President.

Treasurer John W. Sibley,
Birmingham, Ala.



Secretary Theodore A. Randall,
Indianapolis, Ind.

Ex-President R. G. Eisenhart,
Horseheads, N. Y.

Gentlemen of the convention, I am proud to introduce to you a fellow Hoosier, our newly elected first vice-president, Mr. J. W. Robb, of Clinton.

President Robb: Mr. President, ladies and gentlemen, I am a Hoosier and I am very proud of it, and I am very proud of being elected first vice-president in our Hoosier capital. Those of you who have not visited Hoosierdom previously, after having heard the eloquent Mayor of Indianapolis and Chaplain Huston, who so delightfuly entertained us, can realize that we are pretty good people here after all, and we have some other people who can do things and say things as well as our Secretary Randall. We are all proud of Indiana, proud of her work, proud of her men and of her women. It is a great pleasure to me to accept this honorable position today, and I thank you all. I pledge you my best efforts to help make the coming year a successful one. (Applause.)

President Clippert: Who comes next, Mr. Secretary?

Secretary Randall: We have a nice letter from Mr. Hammond. We know his heart is with us and that he would like to be here.

To the President and all officials and members of the National Brick Manufacturers' Association.

Ladies and Gentlemen:

I cannot be with you in body at this convention, my thoughts and wishes for your success are yours. The reason of my failure to attend this convention is that February 12, 1873, was the date of my marriage, and we must remain at home at this time, as Mrs. Hammond does not feel willing to travel so far with weather and other conditions which now exist.

May I not wish for each of you a successful year in business and to express to you what each of us has at heart—peace for the world and speedy return of our absent loved ones, safely to their homes.

Very truly,

WM. K. HAMMOND.

I suggest we also send a wire to Mr. Hammond.

President Clippert: We can take that by consent, I am sure. Mr. Sibley, I am going to ask you to escort Mr. Dunwody to the platform.

I am delighted to introduce to you, ladies and gentlemen, your third vice-president, Mr. W. A. Dunwody, of Macon, Ga.

Mr. Dunwody: Mr. President, ladies and gentlemen, no doubt you are surprised somewhat at seeing this old baldheaded man elected as your third vice-president after the nomination accorded me by our friend Stafford. I was getting a little nervous, for I was afraid I would not get to say something, but I don't want to lose an opportunity to stand up here and look into your faces and thank you from the bottom of my heart for this honor, because this is an honor, and when I attempt to express my appreciation, notwithstanding I come from a dry state, I am too full for utterance. John Sibley has failed to give you a nigger joke, but the remark of a down-south darkey expresses the condition I find myself in today, and you ladies will excuse me if I say something that will shock you a little. Birmingham, Ala., the home of Mr. Sibley, is naturally a large iron center. The people wished to commemorate it and make it well known to the world and offer something unusual to you Northern and Eastern and Western people who favor our Southland with a visit. They conceived the idea of casting a man of iron—a Vulcan—and when they got it cast it was too heavy to raise, and so it was left lying on the ground. Two Westerners passed through the city, and some one showing them around told them about this iron statue. Shortly after, they passed through the town again and got off and walked around a bit, and when they came to old Vulcan lying there, one of them said, "There's old Vulcan, still in status quo." Two negroes were standing by and heard this remark, and one of them said, "W-what dat man say?" The other said, "I know what he say, but I don't know what he mean. He say 'old Vulcan in statu ko'." "Oh, I know what he mean—he mean Old Vulcan in a hell of a fix." (Laughter.) So when I try to express my feelings on this occasion, I find myself in status quo. But the election of a Georgia cracker to this office is an indication that our sectional prejudices have been obliterated, and we are one country, all united for the advancement of a free people on the earth, and for democracy, as has been so beautifully stated by the Indianapolis Mayor. I want to take this opportunity of saying that the people of Georgia and of our Southland echo and endorse every sentiment that was so eloquently expressed by the Mayor. However, as I said, I don't expect to make any long speech, but I assure you it is a privilege to stand here and realize that though attending these conventions for a comparatively short time I have attained to this honorable position, one any man could be proud of. As far as it is possible, I promise you I will measure up to the duties imposed on me as third vice-president. I thank you. (Applause.)

President Clippert: Now we come to the secretary. Mr. Secretary, will you please introduce yourself?

Secretary Randall: Mr. President, ladies and gentlemen, while the Mayor gave you the real welcome to Indiana, I want to say I am delighted to have you here in my own home town. If Chaplain Huston were here, I would ask him to

Ex-President C. P. Mayer,
Bridgeville, Pa.

Ex-President Eben Rodgers,
Alton, Ill.

Ex-President Wm. Conway,
Philadelphia, Pa.

sing, "I'm a Devil in My Own Home Town." I assure you all that while I have had this pleasure every year for thirty-two years, I never before felt more elated than I do now. If you will look at those banners on the platform, you will find the names of the different cities in which we have met, and on the fifth line of the first banner you will see Indianapolis, but it is going to be my ambition to see Indianapolis inscribed upon that banner once or twice more before we finish that last column. I hope I may be privileged to continue to serve you, and with the same support I have had from the first, I am going to try to give you even better service, because as time goes on we are better qualified to render better service. The association is in good shape numerically and financially, and better, if I may say it, spiritually. Our association is strong in courage and enthusiasm, and no criticism, no matter what the source, can lessen the enthusiasm and good fellowship that exists in our membership. What matter it if the yellow dog bays at the moon? Let him howl; it relieves him and does us no harm. I think we can start the year with the confidence that no matter what tribulations may beset the industry, we will be equal to our opportunities and our association will grow. Garfield said to a New York audience, when the first gun was fired at Fort Sumter, "God reigns and the government at Washington still lives." I think we will find that the world war will soon be over and that God still reigns and our industry will continue one of the largest and most important in the world. I thank you, gentlemen, and I will do my best in the years to come, as I have in the years gone by. (Applause.)

President Clippert: It is, of course, a very great pleasure for me to present to this audience Mr. Sibley, our newly elected treasurer.

Treasurer Sibley: I thought when the cycle of years rolled around and we got back home, so to speak, I might be relieved of this service, and also of the duty imposed on me by our good friend, Anthony Ittner, of providing that annual joke, which sort of put me in the position of the Mark Twain of the association. It is needless for me to say I am overwhelmed by your kindness. It puts me in the position of the old darkey at the Country Club. Some northern business men were down there and they heard every man being addresed as Colonel, so they called one of the darkeys and said, "How is it there are so many Colonels around here?" "Well, I tell you, boss; you see some folks is bo'n Colonels, and others is made Colonels, and other folks get to be Colonels by being kind to niggers." (Laughter.) So, I dub you all Colonels, male and female, and pledge you my loyalty forevermore. (Applause.)

President Clippert: This finishes the list of officers. What is the next on the program, Mr. Randall?

Secretary Randall: The next, Mr. President, is the report of the Committee on Technical Investigation, which will be made by Prof. Albert V. Bleininger, who is acting as secretary pro tem. of the committee during Major Orton's term of military service.

Report of Committee on Technical Investigation.

A. V. Bleininger: Mr. President, I desire to report that the investigation on brick piers has been completed and the report is being printed in the government office. This is the first report whch has ever been issued in co-operation between the United States government and a national clayworking association. The work which has been done is quite extensive, it has been laborious, and at the same time it has required quite an expenditure of money, but I believe the effort has been justified and the results will be received by builders and engineers and architects with interest. I believe the fundamental statements made in this work will be of considerable service to the building industries. We had hoped to have the report ready for distribution at this convention, but the government printing office has been very busy, so the work has been delayed. Mr. Bragg, who has done most of the work, will make a report to you at this convention, giving a summary of the data.

Major Orton, I would like to state, has also completed a piece of work of considerable value to the brick and allied industries relating to the resistance to weathering, which is, of course, the prime requisite of all building materials. Building materials must rise or fall according to their ability to resist the elements. For this reason, and I think quite wisely, Prof. Orton has undertaken the study of the resistance of burned clay in the form of brick, to freezing action. He has conducted a very elaborate investigation, and the work has been completed, being now in Prof. Orton's hands. Both the effect of natural and artificial freezing have been studied. Owing to the duties devolving upon him he could not submit the report to you. It has only been completed a short time, but I feel sure that it will be put in shape before long. (Applause.)

A. V. Bleininger, Pittsburgh, Pa.
Secretary Committee on Technical Investigation.

President Clippert: What is your pleasure in regard to this report?

Secretary Randall: I move it be adopted.

Mr. Eisenhart: I second the motion.

Carried.

M. E. Gregory: I have a resolution which I desire to offer at this time, the object of which is that the papers to be presented to this convention shall first be passed on by the Technical Committee and that they may be arranged for six months in advance, so we may have papers of the highest class. The committee could then be looking forward during the year for some man to present these papers. It would mean we would have papers which we could come here and listen to with great benefit. The idea of some men coming before the convention to air their views or to hear their voices would be eliminated. Many of us come many miles to attend this convention and we want to take some beneficial thoughts away with us. If this is taken up thoroughly and placed before the Executive Committee, we could have every branch of the industry covered, before the convention, by papers of the highest class, like the engineering societies and the ceramic society. Only a few weeks ago I was looking up a certain subject and I could not find anything in the proceedings of the National Brick Manufacturers' Association touching on the subject. No paper should be presented until it has been passed on by the Technical Committee, and then we would have no papers but those worth spending our time to read and put in print.

Secretary Randall: My impression is that this resolution or what it covers is practically taken care of by our rules of procedure. I can readily see how it might be advantageous to refer technical papers to the Committee on Technical Investigation, but I think if you undertake to refer all papers to the Committee on Technical Investigation you would make a great mistake. It would be impractical to burden the Committee on Technical Investigation with work of this sort. Then, too, sometimes but a few weeks before the convention, some one writes to the secretary suggesting that a paper on a particular subject would be desirable and we have to provide for a paper on short notice.

Mr. Gregory: It is my idea that the president would have power to appoint men from each branch of the industry to prepare papers.

Secretary Randall: I think it would be impractical. We cannot tell what may happen within thirty or sixty or ninety days, that may be of vital importance. We could not formulate a program so far ahead of time that would meet the exigencies of the occasion. The regular program is made up and submitted to the Executive Committee, of course, and then our rules of procedure provide that no papers not previously included in the program shall be heard unless first submitted to the Executive Committee. I would suggest that Mr. Gregory's resolution be referred to the Committee on Resolutions. I doubt exceedingly if the Technical Committee would care to take up program work.

Major Edward Orton, Washington, D. C.
Chairman Committee on Technical Investigation.

W. D. Richardson: Is it not a rule of this association that all such resolutions go to a Committee on Resolutions, to be appointed by the presiding officer? I think it is a wise procedure that these things go to the Committee on Resolutions to be considered and then passed on afterward at a later session. Many of us like to consider these things a little bit before we are asked to pass judgment.

President Clippert: If there are no objections, we will take this procedure. We will now have the report of the War Service Committee by our secretary.

Report of War Service Committee.

Secretary Randall: I presume most of you know we have a War Service Committee, which is composed of the active members of the Executive Committee, appointed in response to a communication from Washington some months ago, to confer with the officials at Washington about things necessary to help win the war. By active members of the Executive Committee, I mean the president, three vice-presidents, treasurer and secretary, so we have a committee that represents the different sections of the country, and are as well representative men. In due time we received notice to come to Washington, and as it was not convenient for the other members of the committee to go at that time, I went as the representative of the other members of the committee. A conference was held with Mr. Noyes in connection with representatives of other branches of the industry, for the purpose of determining what, if any, saving could be effected in the fuel used by the brickmakers of the country. Inasmuch as the other members of our committee could not be present, and feeling it was a matter of much importance to the industry, I requested several prominent brick men to meet with us at Washington at the appointed time. Mr. Conway, being located near to Washington, was able to come and bring a number of Philadelphia brickmakers with him. I thought Vice-President Hammond would be able to get there, but he was unable to do so, but he requested that I represent him. The same was true of President Salmen and Vice-Presidents Clippert and Robb, so you will see I was the duly accredited representative of this association. There met with us at that time members of the National Paving Brick Manufacturers' Association, of which our good friend, Will P. Blair, is secretary; members of the American Face Brick Association and representatives of the refractories and the hollow tile industry. My train was nine hours late, so I was not able to attend the preliminary meeting, but I attended the subsequent meetings and I acquiesced in what had been done. Unfortunately, at our first meeting there were conflicting interests; the representative of the refractories wanted one thing; the paving brick manufacturers another; the face brick people wanted something else; and the hollow tile people something different, and the common building brickmakers, whom I represented, still something different. There was no real co-operation among those representing the different branches of the industry. So, for that reason, no definite conclusion was reached. It became apparent to Mr. Noyes that the only thing to do was to take the matter up with the different branches, so we came away having accomplished nothing, except that Mr. Noyes assured us that there was no such thing as a nonessential industry. Of course, if we reach a crisis, those industries which are less essential than others will have to take a back seat, and the real essentials given the first place. These facts were set forth in an article in your official organ last month, and since then that article has been reprinted and sent to several thousand building brick manufacturers not members of this organization. I think this organization can more properly than any other represent the common building brick manufacturers. The other branches have their own organizations. I see no other way in which the common building brick manufacturers can approach the government except through this organization. Our association is perfectly able to represent the common building brick industry and through our executive will do so effectively. It might be well for this convention to ratify the action taken by your Executive Committee in regard to this War Committee that shall co-operate with the officials at Washington in regard to matters affecting our industry.

C. P. Mayer, Bridgeville, Pa.: I rise to offer a resolution, Mr. President, covering the action of the secretary and the men who acted with him, to create a basis on which they might work in the future. You will note that the Mayor of the city and all these men from the state seem to like to say they are Hoosiers and proud of it. I don't know what a

Hoosier is, but if being in Hoosierdom is what makes my throat parched as it has been for the last two days, Hoosierdom is not to me so noble or so great. (Laughter.) Now, the secretary in making his report did not quite make it clear enough to the average brickmaker that the object of the government in calling the clayworkers together is to conserve fuel. It is the policy of the government first to permit all industries making war materials, ammunition and government supplies of all kinds, to have a full allotment of fuel. Then the question to be raised is how much fuel there would be left, and whether there would be enough left to permit the nonessentials to operate. When I say nonessentials, I do not care what the fuel administrator calls a nonessential. There is no factory really a nonessential. I mean a factory not making war materials. What the government wants to have done is this: They want the brickmen to agree to a percentage of fuel reduction—that's fuel conservation. We ourselves shut down our plant some months ago and I am devoting myself to another line of business, and I advise other brick men to do likewise where they can so arrange their affairs. If you undertake to operate on a 25 or 50 per cent. basis, you probably won't be able to get the cars to ship your brick in, if you succeed in getting coal with which to burn them. Secretary McAdoo has said that building operations should be curtailed as much as possible. In other words, only such buildings are to be erected and constructed as are absolutely necessary. That is not very encouraging to the brickmaker. You know, of course, I am making paving brick, not building brick, but we are all in the same boat in a sense, and I want to offer the following resolution:

Resolved, That we endorse and commend the work recently done by our secretary at Washington, in the interests of the members of this association before the United States Fuel Administration; and be it further,

Resolved, That our president and secretary continue to represent our interests at Washington, and that our president be further empowered to call in such other members who are not already represented by some allied association, to act on the committee as he may see fit and the occasion demands.

Charles H. Bryan: I move the suspension of the rules and the adoption of this resolution.

W. D. Richardson: I think it proper to act on that resolution without referring it to the Committee on Resolutions, as it is really an approval of the report of work done by a committee. Therefore, I second the motion.

Carried.

President Clippert: I will ask Secretary Randall to announce the next.

Secretary Randall: This brings us to the first regular number on the program. The subject was to have been covered by Mr. McNeis, but he writes that very important business demands his presence elsewhere, so our good friend, Dr. Frank S. C. Wicks, of this city, has agreed to speak to us on "The Duty of the Hour."

"The Duty of the Hour."

Rev. Frank S. C. Wicks, Indianapolis, Ind.: Mr. President, ladies and gentlemen, as your secretary has explained, I am a substitute. This is the day of substitutes. Your committee had planned to give you the imported article, but as the imported article failed to arrive, you will have to be content with the domestic product. I do not believe it is a real interruption of your program. You are first of all not brickmakers. You are first of all American citizens, and I assume you are each one of you asking, "How can I best fulfill my duties as an American citizen?" America is a land that has found its soul. Up to our entrance into this war, it was thought we were a nation that had nothing but a stomach, intent upon what we should eat and drink and wherewithal we should be clothed; that we were like the octupus, all tentacles and stomach. But we have regained our self-respect, and we have gained the respect of the world.

The very best description in one sentence that has ever been given of war is that which comes from General Sherman, "War is hell," and yet war as General Sherman knew it was but a toy war, a fire with painted flames, as compared with this war in which we are now engaged. Do you know that the devil is no longer black? He is white—he has turned pale with envy before the exploits of the kaiser. Trampling upon all the safeguards devised by international laws; the ruthless invasion of Belgium; the sinking of the Lusitania; the murder of innocent noncombatants, women and children by Zeppelins and submarines—this is war as Germany wages it.

Now, while war is hell, we must not leap to the antithetical conclusion that peace is heavenly. There are many kinds of peace that are far from being heavenly. The time comes when even the Prince of Peace cries out, "He that hath no sword let him sell his garment and buy one," and that time has come to us as a nation. Straight from the heart of an aroused people comes the echo of the President's words, "The right is more precious than peace." Until we entered this war the soul of America was shriveling. Our conscience had been stung to the quick by the invasion of Belgium; agonized when the cries of the women and children reached us. We did everything but bare our strong right arms. Then the Lusitania went down and we were roused again, but only with a transient passion, that soon subsided. The reports of further atocities reached us. We found that our own land was filled with plotters, destroying our property and poisoning the minds of our people. And still we were unmoved in our patience. Then came the word that the submarine horrors would be unloosed again, and quick upon its steps there was the intimation contained in the Zimmerman note, a grave plot to embroil us in war with friendly powers and the parcelling out of our territory. As a self-respecting nation, we were compelled to declare war. The American eagle, which had been slumbering with head under his wing, awoke, and having at last opened his eyes, took wing.

Rev. Frank S. C. Wicks, Indianapolis, Ind.

Nevertheless, war is hell. Well, what are we going to do about it? Are we going to turn our backs and retreat, or are we going forward into its sulphurous depths? Now, what does a decent man do when he finds himself confronting a hell upon earth? Does he look for a back door through which he can make his escape? Does he look for a stairway up which he can climb and find a heaven? Never. A decent man when he finds himself in a hell upon earth, plunges in and tries to put out the flame. That is what we are going to do. We are going to stay in this war until we take the hell out of it. That is the subject upon which I am going to talk to you. I can claim on high authority to be somewhat of an expert on this subject. A number of years ago I was asked to make an address before the state society of physicians, and I stated that I wished to refute a popular impression that there was some rivalry between physicians and ministers. Some believe that the business of the minister is to get people into heaven, and the business of the physician to keep them out of heaven. I told them I did not have any interest whatever in getting people into heaven, but in getting heaven into people. And turning to the negative, I said: "I am not at all interested in keeping people out of hell, but in keeping hell out of people." Dr. Wiley, who at that time was interested in his pure food campaign, said he was glad to know Dr. Wicks had this power, for he had received a telegram but a few days since from San Francisco containing this sentence, "Give them hell." "Now," he said, "I am glad to know after I give them hell, I can send them to Dr. Wicks and he can take it out of them."

We can take hell out of war, when we make it a war against war; when we see to it that the issue of this war is an enduring peace. And that peace can come only in one way, at the end of the path to victory. An inconclusive peace now would mean only a truce while the warring nations would rest and gather strength for the next conflict. The means to that end of enduring peace have been started by our President—the creation of a family of nations, and a place will be made at the table for Germany itself, when the people of Germany make the request. Next, we can take the hell out of war when, again in the words of our President, we make the "world safe for democracy." The world must be made safe for its self-governing people. And it cannot be made safe so long as one man or one class of men have it in their power to plunge the whole world into war. Abraham Lincoln said: "This nation cannot be half slave and half free." To paraphrase his words, we say: "This world cannot be half autocratic and half democratic."

Third, we can take the hell out of war when we take the hate for persons out of it. I happen to be one of the Four-Minute Men appointed by the government for the dissemination of government information, and our latest instruction is that we shall do all we can to remove hatred as one of the motives for engaging in this war. We do not hate the German people. We pity them. We hate the chains which bind them. We hate the system which leads them into practical slavery. We hate the philosophy which teaches them it is right to dominate other nations. We don't fight because we hate. We fight because we love something more than wealth and life, and that is freedom and justice.

R. C. Burton, Zanesville, O.

Fourth, we have already taken some of the hell out of war by declaring that our purpose is not self-aggrandizement. We have no lust for conquest. We have no desire for personal profit. We have no selfish ends to serve.

Now, the fifth way we can take the hell out of war. I should perhaps feel some delicacy if I were addressing a group of steel men, or a group of farmers, but I do not think I have any need whatever to warn brickmakers against profiteering. The reports I have listened to would indicate that the air of prosperity you present is the result of the prosperity of past time and that mighty little of it has come since this war has come. We must remove profiteering. Let not the many be plunged into poverty while a few gather a golden harvest. The Department of Labor of New York City announces it has found the chief cause of industrial unrest is labor's feeling that the large corporations are making huge profits out of the war, and the report goes on to state that during the last year the number of millionaires has increased from 14,571 to 22,696, and I don't believe there is a single brick manufacturer in the list. The United States Treasury Department estimates there are 3,733 persons with fortunes ranging from $3,750,000 to $1,000,000, and these figures are based on the income tax returns.

I wish you business men shared with me my admiration for Henry Ford. I believe he is a man with a vision. He is the one great example of a man who refuses to sieze upon the opportunity to enrich himself out of the war. He has made an offer to furnish to our government 3,000 trucks a day, and he says: "We are ready to furnish these trucks to the government at shop cost. I will take no profit for any thing produced for any government during the war."

Is this taking the hell out of war merely a theory? Have I been losing you in the rose-tinted clouds of an ideal? We have had such wars. The War for Independence, the war of the child against its mother, had the hell taken out of it when it resulted in the establishment of a free and independent United States of America. The Civil War, that fearful fratricidal war had the hell taken out of when it made for freedom to all within our borders. History presents us again and again with instances when the hell has been taken out of war. There are two notable instances where the hell was not taken out of war—one our war with Mexico with the result that to the south of us today there lie countries that look upon us with suspicion and dislike. The hell was not taken out of the Franco-Prussian war with the result that Alsace-Lorraine has been a gapping wound in the body of Europe, bleeding ever since, and perhaps is the most potent cause of the present war. Speaking of the Civil War, Emerson said: "I believe America will affirm and establish the principle that in no instance will the guns go in advance of the perfect right." In this war have our guns gone in advance of the perfect right? I do not believe it.

If there ever was a holy war, smiled upon by heaven—if there ever was a war in which right grappled with wrong and justice is locked with injustice in a life and death struggle, this is that war.

To win this war, in the words of President Wilson: "We dedicate our lives and our fortunes, everything we are and everything we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness, and the peace which she has treasured. God helping her, she can do no more." (Loud applause.)

President Clippert: Dr. Wicks, I am sure I speak for all our members when I say we thank you very kindly for your splendid address and we feel we are very fortunate in having you with us today.

Charles H. Bryan: I move a vote of thanks be extended through our secretary to the mayor of the city of Indianapolis and to Dr. Wicks for sounding the keynote of patriotism which shall prevail throughout this convention.

John W. Sibley: I second the motion and suggest that it be a rising vote of thanks.

Motion carried unanimously.

President Clippert: I will announce the following:

Committee on Resolutions.

M. E. Gregory, Corning, N. Y.
Howard H. Stafford, Augusta, Ga.
Douglas F. Stevens, Cayuga, Ind.
T. J. Neiswanger, Harvey, Ia.
F. R. Carter, Peoria, Ill.
A. R. D. Johnson, Raleigh, N. C.
H. G. Love, Moose Jaw, Canada.
W. C. Mitchell, Cameron, Pa.
J. C. Taylor, Louisville, Ky.

This finishes our program for the day, and I want to remind you that we expect to open our sessions promptly, and as we will only have one session a day, we want you all here on time in the morning.

SECOND SESSION.

Thursday, February 14, 1918.

President Clippert: Gentlemen, we are now fifteen minutes late and the convention will come to order. I will ask Secretary Randall to announce the first number on the program.

Secretary Randall: The first number of this morning's program is a paper by one of our far-western members, who was not able to make the long trip to the convention this year, Mr. S. Geijsbeek of Portland, Ore., secretary of the Oregon Clayworkers' Association, but he has sent his paper, which I will read for him.

BENEFIT OF SOCIAL CO-OPERATION IN THE BRICK BUSINESS.

BY S. GEIJSBEEK, PORTLAND, ORE.

Secretary Oregon Clayworkers Association.

Mr. President and Gentlemen of the Convention:

At first thought it might seem a strange idea that social co-operation should be a benefit in the brick business, or for that matter in the clayworking industries in general, but if we study the matter more in detail, we will find that this is one of the greatest problems which has been rather neglected in all clayworking industries.

Our National Brick Manufacturers' Association does a great deal to help to bring about a benefit of this problem, but it is tenfold more needed in local territories and state organizations, if organized along broad principles, can be made to be indispensable for the welfare and benefit of the clayworkers in their different sections.

In all business it is essential to be acquainted with the party or parties with whom we are dealing. But we find that in the manufacturing business it is rather common that business men in the same line of business do not know each other, except by name and possibly by sight or reputation, and the clayworking business is no exception to this case.

It is more often found that you know your neighbor clayworker by ugly by-names. You have pictured him in your mind, as the meanest, the most un-business like and the hardest man to get along with you ever have known. He is out after your scalp, after your customers, after your trade long years established, in fact he is after your entire business and you think he is therefore out to bankrupt you and put you out of business. You are scared to death to talk to him, to meet him would be an invitation to a prize fight to the finish, in fact you would rather go two blocks one way and three the other when you see him coming in your direction on the street. Such in fact is about the picture of your brother brickmaker and clayworker in general.

Is it any wonder that there is no co-operation among clayworkers with such facts? It has been my good fortune to have charge as secretary of the Oregon Clayworkers Association in a social way of the clayworkers in our state, and I can say without hesitancy, that your fellow clayworker is the nicest man you ever met or got acquainted with and he is the best friend you have in your business. It was a big problem which we had first to overcome, but we solved it by social co-operation. We brought all parties together, held meetings, went out sight-seeing, first the scenery, later the different plants, made trips to other sections of the state, had luncheons and dinners, held evening sessions, and held what we used to call in the American Ceramic Society, when they were still neighborly, Section "Q" meetings.

It was first hard work, but by degrees we got to know each other and now we see our brother clayworker in a different light. We have gotten to the point where we can consider our neighbor clayworker to be made of the same material as we are, all human, pleasant to talk to, open to exchange of views, willing to discuss manufacturing problems and cost of manufacturing, to talk about the methods of accounting for small and big business, to compare notes about bad customers who beat their bills, and last but not least, able to talk about the profits in the clay business and trying to better the business conditions in general. Strange as it may sound as soon as the fear of meeting your fellow clayworker on the same path in this world's business progress has been expelled, business among the clay line started to improve.

In our State Association we have taken up the matter of advertising clay products all over the state in a general way. We are supporting the state drainage and irrigation work. Our President is a member of a joint commission on irrigation and drainage problems. We have been looking after the prison made brick, we are keeping in touch with the railroad situation. We have succeeded in adding nearly every brick, drain tile and other clay products manufacturer in Oregon to our membership list with the exception of a few very small ones. We have held from three to six or more meetings per year. We issue at regular intervals a news letter, containing general information of interest to all members, in fact we have an association which acts as a central bureau for the benefit of all members and the clayworking industries in general and find that by promoting the social side we are more than repaid for our troubles on the commercial side of the ledger.

It is the writer's idea that competition can be made less disastrous, when cost systems have been made along the same general standard and standardization of the business also. We have therefore standardized the size of brick and drain tile and are now working along general lines to standardize cost systems. The cost system is principally an individual problem. It cannot be adopted by a general rule, but after studying the individual circumstances, the main issues can be laid along the same lines, and hence it will be a comparative cost system which will add the social and commercial side of the clay business.

We have made our members feel that they have a great deal in common in spite of the fact that each manufacturer has his separate interests and separate problems. We know now that in order to continue in the clay business in the state of Oregon we must do this at a profit, and that it is essential that there should be co-operation among its members as to the matter of cost of manufacturing. Price cutting, unheard of competition, failure among one of our members, will all react now on all our members, for we know that our interests in these lines are all identical.

In view of the facts of the benefit derived from social co-operation from our state organization, it has occurred to me that our National Brick Manufacturers Association should adopt the same plan as has been worked out by the American Ceramic Society in organizing and installing local branches identified with the parent organization in different sections of our nation. Let local sections organize such bodies for the promotion of the social features as outlined above, and the whole industry will be benefited accordingly. This might be put in the form of a resolution and referred to the Executive Body for further action. (Applause.)

Samuel Geijsbeek, Portland, Ore.
Secretary Oregon Clayworkers' Association.

President Clippert: The discussion of this paper will be led by Mr. H. H. Stafford of Augusta, Ga.

Co-operation in the Brick Business.

H. H. Stafford: Mr. President and gentlemen of the convention, I hesitate to discuss before this audience the question enumerated under Section 3 of this program, and presented by Mr. Geijsbeek, because it seems to me it is the A. B. C's. of this organization. My first attendance upon a convention of this organization was ten or twelve years ago, and I immediately adopted the principles of social co-operation, and it seems to me that any man who attends these conventions would be convinced instantly of the absolute necessity and advantage of co-operation among clayworkers.

I think probably the most interesting thing I can do is to give you a little of our experience in the South. I think most of the states have their separate organizations of manufacturers of brick and tile. In Georgia we have about ten manufacturing centers, the business in that state is generally concentrated in the larger cities, but being on the border between Georgia and South Carolina, my company occupies a rather unique position. We are affiliated with the Georgia association, as well as the South Carolina association, which latter association consists largely of small, scattered plants. The production of my company about equals the production of the other plants in South Carolina, and yet we have deemed it a wise policy to lend our hearty co-operation to these small manufacturers, and for seven or eight years it has seemed to be beneficial to them and to us.

About a month ago I was invited to North Carolina to attend a meeting of about twenty clayworkers from the eastern half of that state and good progress was made toward perfecting an organization with which they have been struggling for a long, long time. I think that effort will result in a very strong mutually helpful organization.

In Georgia your newly elected third vice-president, Will E. Dunwody, is president of the Georgia state association. The question has often been asked whether or not there has been any provision for relations between the state organizations and this national association. I have invariably said this association only bears a relation to the individual clayworker. If I am wrong in that I would like to have Secretary Randall correct me. Some have seemed to think there was no place for state organizations in the national association.

Secretary Randall: We have never had such a provision, but we have always tried to encourage the organization of state and local organizations. Just last year I went to Kentucky and helped them in establishing a state association of clayworkers there. We have never tried to strengthen this association by tying other associations to us. We did not start that way thirty-two years ago. That method of handling such organizations has come into vogue since then.

H. H. Stafford, Augusta, Ga.

Mr. Stafford: In Georgia we have a very wholesome respect for national laws and some of our manufacturers had serious doubts as to the rights of individuals in the same lines of business to form associations, in fact, they acted at times as though it was a crime to be civil to a competitor, but one of the good results from the war has, I think, brought the people to a realization of the senselessness of the isolation of the individual and the benefits to the country at large in increased efficiency obtained through co-operation of every kind. This is strikingly observed now in the splendid cooperation and unification of the railroads of the country under the able management of Secretary McAdoo, who, by the way, is a native of my home state, Georgia. For sixteen years we have maintained at my home city of Augusta an organization among clayworkers, which after thorough investigation by government officials several years ago received a clean bill of health and it has been a distinct blessing, especially to the smaller concerns, who, under the old system of cut-throat competition, could not have weathered the storm, especially under the distressing conditions incident to the war.

While we have never in these state associations practiced the principle of price-fixing, we have by personal contact learned to know each other and have inculcated that fine Rotary principle, "He profits most who serves best," and when you know the good as well as the bad of your competitors I think you are a little less likely, if you are a real sportsman, to deliver a blow under the belt. The standard of business ethics is of necessity raised. One of the most helpful lessons for clayworkers as well as contractors is a realization of the fact that the contract you are bidding on is not the only opportunity you will ever have for business. If you practice the principle of live and let live you will at least enjoy a longer and happier life.

I hope in the course of a year or two you will have a very large representation here from the Southeastern states, which by the way is growing in prosperity and is taking a wider view of the nation's interests.

I would like to say one thing before concluding in regard to these fuel-less days and the distribution of fuel. I want you fellows from the North and East and West to realize that the interests of the various sections of this country are variable. The fuel administration recognized the Mississippi River as the dividing line, assuming that the West is very different from the East. Conditions in New England are very different from conditions in Illinois, for instance, so in many respects conditions in Georgia, South Carolina and Florida cannot be governed by the same rules which might obtain in Indiana, and we should try in settling these national questions to arrive at some conclusions and adopt such rules as will be beneficial to all, and yet we will have to practice the policy of giving and taking in order to accomplish the best results for the whole country. (Applause.)

President Clippert: This is a very important subject. Is there any further discussion on it.

Secretary Randall: I have said so many times that I am almost ashamed to repeat it. This organization is very peculiar in some respects. It is an educational organization distinctly. It never was and never will be a commercial organization in the ordinary sense of the term. Therefore, it must differ from the local organizations because they take up the questions that affect them locally. As Mr. Stafford has said there is such a variance of conditions throughout the country that you cannot hope for anything like co-operative effort throughout the various sections. What is wanted and needed by the manufacturers of New England would not fit the manufacturers of Oklahoma or Texas or Oregon. There are these different conditions that exist, and so this national organization is intended to bring all the representative brick men from the different sections together to discuss things that pertain to the business which can be handled in a general way. When you come to organize for various sections it must be done through the local organizations. Perhaps if twenty years ago we had seen what was going to confront us today we might have organized along lines that would have brought into this association representatives from local organizations as delegates, but I am in doubt if that would have been the case even if we had known of the conditions coming. You take the labor organizations; that is local unions, they send paid delegates to their conventions. The local delegates are elected and sent at the expense of the local union, and the delegate is compelled to attend the sessions of their meetings. If he don't he does not get his expenses. I make that comparison to show the difference between an educational organization of this sort where the members are voluntary delegates and come because they are interested in the work and things considered. That is why it is so difficult sometimes to get a good attendance at our sessions. There are two or three hundred men down in the lobby scattered around, but they are here voluntarily, and it is not up to me or President Clippert to make them come here to the convention hall at the appointed time. If they prefer to stay in the lobby, that is their privilege. As a matter of fact, they really intend and desire to attend the sessions and as a rule when it's too late to regret not doing so. The N. B. M. A. is fulfilling its mission well and it has a lot of work to do along educational lines, and we are going ahead just as we have in the past regardless of unfriendly and unfair criticism.

Charles H. Bryan: I have no discussion to make along the line, but I have a resolution I want to get before the convention. We started out yesterday in a patriotic way and I want to go right on feeling that we are progressing along patriotic lines. I have a resolution I would like to present at this time.

Resolved, That the National Brick Manufacturers' Association, while in convention assembled, pledges its loyalty to the government and offers to the fullest extent its support to the President and the administration in this trying time in our national life, and be it further

Resolved, That this assurance of loyalty and support be immediately telegraphed to the President at Washington.

I move the suspension of the rules and the adoption of this resolution.

W. W. Dickinson, Little Rock, Ark.: I second the motion.

President Clippert: I would like the convention to adopt this resolution by a rising vote.

Adopted unanimously.

President Clippert: Secretary Randall will, as usual, look after this. What is the next on the program, Mr. Secretary?

Secretary Randall: The next is a paper by our second vice-president, Mr. Hammond, of New York City, "Co-ordination in the Brick Business." As I told you yesterday Mr. Hammond is not able to be with us today, but he has sent his paper, which I will read for him.

CO-ORDINATION IN THE BRICK BUSINESS.

W. K. HAMMOND, NEW YORK, N. Y.

Mr. President and Gentlemen of the Convention:

To bring to your minds the necessity for business co-operation is the object which impels me to address the manufacturers of brick throughout the United States, and now represented in this convention.

We are in a business which produces and delivers for use at too low a price the **Best Building Material** and the **Best Road Making Material**, the world has as yet obtained. From this business should result a profit which will provide a sinking fund to make good the investment, to provide for betterments, to maintain the upkeep, and allow a good liberal surplus.

We want this, and many there be, (who, like is said of a widow) know what they want, and are not afraid to try to obtain it.

Yet many, many, more there be of us who have for their incentive only the daily start, the daily rush and all without thought other than to keep machines going, sales made to get rid of goods without proper scanning of credits, and shipments at any price to make room enough in sheds for the product pouring from the machines, because "their neighbors are running full, and they can run as long as the next one," and finally comes a time when, failure of good accounts to pay as promptly as formerly, increased amount of doubtful accounts, a large number long-winded in paying to begin with, and finally develop as not collectible. Makes nights of torture, and days of neglecting conduct of the yards, while vainly trying to raise funds enough to meet pay rolls, and most pressing bills. While to obtain supplies necessary for continuing, any price asked by the various salesmen is agreed to, and finally comes the inevitable day when the *jig is up*. No balance in the bank, bills receivable discounted, and protested, mortgages called, and after years of great physical activity, (never having mentally grasped the problem), find themselves bankrupt, and the property passing to meet as far as it will the claims of creditors. Those who come to this pass, do not know they have not only worked for their own ruin which they have finally reached, and if that were all it might pass without great notice, but their manner and method of management on their yards have an affecting rate of wages, a lack of enforcement of discipline, a reduction of output per man (to quiet the men) developed a competition which those wise to business laws were injured by, through their acceptance and who yet knew could not succeed, and which made for losses in the whole trade because of this improper, and really ignorant method. Who will say that this class who carry and disseminate the germs of business failure might not have become immune and workers for business health, and benefits accruing therefrom, if they could have been **inoculated with the serum of co-operation?** What is co-operation? It will be much easier to tell you people what it is not, because having tried to obtain it during many years, I have met so many skilled in persistently affirming good intentions, and as dilligently as beavers working to destroy the benefits which should have resulted, perhaps **how not to do it**, would be a term better fitted to the occasion. Still co-operation is really so easy, so simple and so surely the right thing for us to take hold of, and hold fast to that it is really amazing to many who give the matter some thought that any one can be found who will not grasp it. Co-operation is to talk it over with our neighbors and exchange experiences, with mental gain to each as always results from these meetings, and then to resolve, and agree with each to prevent as far as possible (and to begin now). Waste! and it is scarcely necessary to tell you what waste is. I refer you to Webster, and urge you, each of you, to carefully read and make note of this word.

One who labors jointly with others to promote the same end is a co-operator, as though all the men engaged in the business were of one mind as they must be, and that mind constituting the intelligence of all the men engaged directs the method of conduct for all, and if one fails so to act for any reason, or for no reason, results will be unsatisfactory, and the real benefit from co-operation deferred until this one can labor jointly with others to promote the same end.

This man who, having agreed, now acts contrary, and underhanded, and secretly against what he had affirmed was for best trade interests, will resent bitterly if called a liar for breaking his word in the matter, and will be indignant if told he is dishonest because he did not carry into effect what he had said he would carry into effect, and yet he may not be a liar, and he may be really honest, because it is the intent which must be considered, he may be ignorant only. Yet I may remind you, who will pass judgment on this ignorant (?) man, that he who is killed by the accidental discharge of a gun in the hands of a friend is as dead as though the shooter had intended the killing. Therefore observe well this man, and his mind before going any further, arrange all details so each detail is understood by each individual, if possible.

Our business is so depressed at present that every effort should be exerted by each of us for mutual conduct of our affairs, to the end that our interests shall be conserved and not put in jeopardy.

That we shall conserve them by knowing the value of our products, and in disposing of these products obtain the value, not only as to price but as to credits. Co-operation will make for safety, and a comfortable **Bank Balance**, while individualism, and neglect to labor jointly with others to promote the same end will inevitably result not only in loss of money to be computed in our trade by millions of dollars per year, but in prestige of our business as compared with others in competing lines, who with vision labor jointly with others to promote the same end. (Applause.)

President Clippert: Mr. Hammond has sent us quite an interesting paper which fits in with the previous discussions. If there are no discussions on same, we will take up the next.

Secretary Randall: This brings us to the topic, "Waste in the Brick Business," the discussion of which is to be led by Mr. W. D. Richardson, of Columbus, O., who is with us as usual.

WASTE IN THE CLAY INDUSTRY.

W. D. RICHARDSON, COLUMBUS, OHIO.

Mr. President and Gentlemen of the Convention:

As I understand it, one who is appointed to lead in the discussion of a subject is expected to define and outline the subject, and also has the privilege of selecting any division of that subject for treatment in his own way. The subject of Waste in the Clay Industry is big enough for all of us to have a part in the discussion, and I am sure at this time it is important enough to justify all of the attention and all of the time we can give it at this meeting. We are having impressed on us nowadays on every hand, both in the public press and on the platform, and in circulars received in almost every mail, that waste ought not to exist anywhere under any circumstances: That the American people must come to the practice of thrift, and thrift is defined as the same administration of one's personal affairs to the end that there shall be the least amount of waste, the least amount of lost motion and the greatest possible good to one's self and the nation.

Now I think we will all agree that clayworkers have been great wasters, and that the time has now come when we must give our attention to the saving of man-power and materials as we never have before. It is now stated that the waster and the spendthrift, as well as the drunkard, is a public menace. I am now addressing myself to brick manufacturers as a branch of the clay industry in which you are all interested. Waste in brick manufacture begins at the foundation of the business, as soon as the company is organized and the capital subscribed. This waste too frequently takes the form of investment of capital in an undertaking that has no basis for commercial success, in a brickmaking plant that has no reason for being, and it is discovered so late that the entire investment of energy and capital has been wasted.

Then on the other hand, there is often a waste of capital in the undertaking when the conditions are favorable to success, but where the investment has been made in a plant that was not properly designed and in equipment not adopted for the product that could be best manufactured from the clays at hand, so that before the plant can be made a success, practically the whole of the original investment must be wiped out.

Another serious thing is the waste of man-power in the clay industry. Undoubtedly we produce in America more units of product with the same man-power than any other country on the globe. We have more labor-saving machinery and we produce mechanically on a larger scale in the brickmaking industry than any other nation in the world. And yet no man who knows about these things, no competent engineer can go over a brick plant without noting some operation in which there should be a saving of labor. Waste of labor in brick plants should be thoroughly discussed at this meeting, but I want to confine my remarks to a waste which at this time, is being forced upon us for consideration more than anything else, and that is waste of fuel. That there is an enormous waste of fuel in burning brick, we all know. It is a fact also that we now know how this waste of fuel comes about and how most of it can be prevented. What becomes of the fuel that goes into the brick kiln? Careful investigation of this has been made and elaborate heat tests have been conducted by Bleininger and others on brick kilns in practical operation, and I want to present some average results of these tests.

Not considering the waste in unconsumed carbon in the ash, which is comparatively small, of the heat generated in the furnaces (I am giving an average of several tests made on periodic kilns) 28 per cent. goes through the kiln and out of the stack, 42 per cent. is lost through the walls and crown of the kiln from radiation, 11 per cent. is absorbed by the kiln structure so that there is only left 19 per cent. of the heat developed in the furnaces to be utilized in the burning of the brick. When we know these facts, we ought to be able to see that something should be done to save this waste. These tests were made on a paving brick plant in round down draft kilns and were made under ordinary everyday operating conditions, and they are probably average results. There are various ways in which even with the periodic kilns, this waste can be lessened, no doubt. Many attempts have been made to take care of the loss out of the stack. Since I have been interested in the brick business, I don't know how many attempts I have seen made to utilize the waste of the hot gases from the periodic kiln, but none of these attempts have so far as I know resulted in any marked saving of cost of manufacture. I have seen several attempts made to generate steam from this heat and a lot of money squandered but no commercial success has ever been made of it, though where hot water is required or low pressure steam for some purpose, it may be of some value under certain conditions.

Then I have seen attempts made to utilize the heat out of burning kilns for drying brick and have myself designed such a system. Several attempts have been made to save heat from a periodic kiln by taking the hot gases to heat another periodic kiln. I was very much taken up with that at one time myself, and in one of the old volumes of the Transactions of the American Ceramic Society, you will find the description of a system that I designed. But all of these attempts have been successful in saving only a small part of the fuel and with a very large investment.

This is not a new subject. Our present condition existed in Europe in the middle of the last century. The high price of coal was seriously restricting the use of brick as a building material, and it was seen that something must be done to save fuel in the burning of brick. In 1858 Hoffman invented in Prussia his Ringofen for burning brick upon the principle of the Siemens regenerative furnace that had come into use in the iron industries. The Hoffman kiln was a practical success from the start and saved about two-thirds of the fuel that had been used in the periodic kiln, and while his first kiln had some defects and caused some trouble that afterward had to be remedied, yet from that day to this no other practical way has been devised to save any great percentage of fuel in burning brick, and it is the only way we are likely to discover in our time. These continuous kilns are now improved and there are so many different types that it is difficult for a man to decide which is the best for his use. I believe there is no product being manufactured out of clay that cannot be burned successfully in a continuous kiln. I have been advocating continuous kilns for years, you know that, while it is only recently that a kiln of my invention has been placed on the market.

It will not suffice to save 15 per. cent or 20 per cent. of fuel. We were told yesterday that the Fuel Administration wants the brickmakers to use 50 per cent. less coal. With the continuous kilns we could save 50 per cent. of coal easily and have the same output as before. The great saving of fuel by the continuous kiln comes chiefly from four sources:

1. The utilization of the heat absorbed by the kiln structure and by the burnt brick in heating up air for combustion of the fuel and in furnishing hot air for watersmoking.
2. The utilization of the hot gases passing out of the kiln or chamber being fired in preheating other kilns or chambers of brick.
3. The heavy outer walls, filled with loam or sand, and the heavy covering of loam or sand over the top of the kiln reduces greatly the loss from radiation.
4. The loss from radiation is also materially reduced by the short time, 24 to 48 hours, required to fire a kiln or chamber.

There are ways by which a part of the heat lost in burning can be saved by other means than the continuous kiln. Many of you are familiar with these methods of saving. I will not take time to discuss them, but would be glad to answer any questions in regard to them that may be asked. The result of a careful consideration of these methods and a calculation of their total cost always brings me to the same conclusion, a continuous kiln at no greater ultimate cost and a much greater saving of fuel and greater compactness of plant and conveniences of operating in all kinds of weather. I believe that there is no escape from this conclusion and that the day is coming when the continuous kiln will be as universally used in America as it is in Europe. The problems will always be to select a continuous kiln that is adapted to the conditions and purposes in any special case. In this also we should be guided by the experience of European clayworkers and put such problems in the hands of competent ceramic engineers who have had successful American practice.

I hope this question may be discussed freely. We must all think of these matters and we must all give attention to these little leaks if we are going to remain in the brick business. My first experience in the brick business was with a company, the president of which was a wholesale grocer, and his friends and family were urging him to retire from business, and he said to them, "I don't want to do it. I have just found out after all these years where the leaks are, and I want to get the benefit of the knowledge and experience that has cost me so much." If we older men in the brick business have learned anything at all, we ought to know where the leaks are, and where to save. (Applause).

General Discussion.

President Clippert: Mr. Richardson's subject is of interest to every one in this room. If any one would like to discuss the subject further or ask Mr. Richardson any questions, now is the time.

W. E. Dunwody: I would like to ask a question along a different line from the question Mr. Richardson has handled. Down in our section of the country we all of us have a great deal of trouble with labor. On some of our plants we use the old-style, up-draft kiln. We set out brick about fifty high. There is a terrible amount of waste and energy in pitching the brick to the top of the kilns. Does any one know any practical way of getting these brick up except by main brute force. The setting machines are too heavy for the small kilns.

A. R. D. Johnson: We are solving that question and solving it practically. We don't have any men in the kiln to set the brick. I showed on the screen at one of our conventions a couple of years ago that system at our plant. Some of you may remember. If you don't, and care to hunt it up you can find it in The Clay-Worker, I am not sure what number. I will be pleased to send to anyone wishing it a booklet, which we got out for advertising purposes to anyone who will write me. They will find in it as good a description as I could possibly give, and would save time in describing it in detail. I would suggest in this connection, however, that in the installation of that system we were building a new plant and we were not hampered by fixed conditions that exist in Mr. Dunwody's case. It might be difficult for him to install. Our kiln room is a part of the arrangement, one fits into the other.

President Clippert: If there is no further discussion, we will pass No. 6, as I understand Mr. Bragg has not yet arrived, and take up No. 7, "Fuel and Labor Economy," by Harold Copping, of Kankakee, Ill. Mr. Copping is attending the convention, but it seems he is an extremely modest man and is too bashful to read his own paper, which Vice-President Robb is to read for him.

Mr. Robb: I don't know just why Mr. Randall selected me to read this paper, but, of course, when he asked me to read it, I told him I would.

FUEL AND LABOR SAVING.

HAROLD COPPING, KANKAKEE, ILL.

Mr. President and Gentlemen of the Convention:

The constantly increasing price of all material, supplies, fuel, labor, in fact, everything connected with the manufacture of claywares, has naturally resulted in some advance in the price of the products of the clayworker. However, such advances as the clayworker has been able to secure for his wares, are not in proportion to the increased cost to him of the production of the same.

As there does not now appear to be any possibility of relief through other channels, the manufacturer has turned to economies in plant operation as a solution of this problem.

The fuel account being next in importance to the pay roll is possibly the first item to receive attention, and we find the continuous kiln in greater favor than ever before. We also find the use of producer gas for burning claywares becoming much more popular, not only in connection with continuous kilns, but for burning both up and down draft periodic kilns. Until a very few years ago it was not considered practical to employ producer gas for burning periodic kilns, but the difficulties presenting themselves have evidently been satisfactorily overcome, judging by the number of plants now successfully employing this system for burning claywares. The use of pyrometers, and other mechanical means for determining temperatures and assisting in fuel economies are now considered by most clayworkers as absolutely necessary.

We find more power plants equipped with automatic stokers, chain grates, shaking grates, and other up-to-date equipment calculated to reduce fuel consumption.

The labor account, representing the heaviest charge against the plant, will not likely be reduced, and we may expect further advances in this direction with less efficient labor. In view of this fact, we find a much greater demand existing for labor-saving equipment of all kinds, particularly conveying equipment.

The wheel-barrow has always been a part of the brickplant, and it is not probable that we will be able to dispense with this old friend entirely, but when it is remembered, that every trip made with a wheel-barrow of material necessitates a return trip with the empty barrow, and that one-half of the wheeler's time therefore wasted, it behooves us to eliminate this valuable tool as much as possible. With this end in view, manufacturers of conveying equipment have recently introduced machinery for drawing the kilns to stock piles and to the railroad cars.

During the past year or two there has been put upon the market a line of portable conveyors for handling materials within comparatively short distances. These machines are built of steel in standard lengths, can be increased in length any time by addition of three foot sections—on same principle as the sectional bookcase. The conveyor is operated either by gasoline engine or electric motor, and while possessing all the necessary strength and rigidity of a much heavier machine, it can be readily moved on its own truck from one part of the plant to another by one man. Events since the United States entered the war, have almost forced the adoption of this equipment in plants of all sorts to replace many of the men drawn from the ranks of industry.

We find these portable conveyors employed for unloading coal, clay, shale, and other loose material, draintile, brick, sacks of lime, cement, etc. from railroad cars, and also for loading the same into wagons and cars. When employed in the first connection, the conveyor is detached from its two-wheeled truck, and is suspended by means of a chain hoist from some overhead point. When used for loading cars or wagons, delivering clay or shale to elevators or crushing machinery, elevating coal to producer platform, and similar work, the conveyor operates on its own truck.

Where clay is stored in sheds, these conveyors are employed to deliver the material from the far sides of the shed to the belt traveling through the center of the building under the floor and feeding to the crushing machinery, or elevator. Much wheel-barrow work is eliminated in this way.

This conveyor can be employed at the clay bank to great advantage. Where much stripping has to be removed, and the use of teams and scrapers necessary, the conveyor is set in a trench a little wider than the machine itself. A removable platform is placed over the conveyor. A wooden chute discharging into the steel hopper of the conveyor is arranged in connection with the platform. The overhanging end of the machine is supported by a chain hoist attached to a trolley running on a wire cable, or in some other way, so that the dirt is deposited across the track and steam shovel and well out of the way of any future operations. The conveyor extends far enough onto the bank to permit scrapers being dumped through the trap in the platform without risk of horses slipping off the bank. The haul is materially shortened and the work speeded up, with consequent reduction in cost of the stripping operations.

The manufacturers of this conveyor claim that one man with their conveyor equipped under many conditions will equal three, four, or more men with wheel-barrows, and that it can be used under many conditions where even a wheel-barrow cannot be employed owing to lack of space, and in such cases the conveyor eliminates the necessity of rehandling.

The larger clayworking plants are invariably well equipped with fixed conveying systems for storing and reclaiming clay, and general handling of the same during the process of manufacture, but under these favorable working conditions, it is found that the portable conveyor rounds out and completes the system, thereby reducing labor cost. In the smaller plants, it takes the place of the fixed conveying system, and tends to place the small plant on the same economy production basis as the large plant.

Owing to the fact, that it is a "one man" machine, and its extreme flexibility permitting its employment in any part of the plant, this conveyor is materially assisting many clayworkers to meet the problem of reducing the cost of production of their wares. (Applause).

President Clippert: If Mr. Copping in the room, I wish he would come forward.

James E. Randall: Mr. Copping was here a while ago, but is under the weather. He has taken a heavy cold and has a porous plaster on his chest.

President Clippert: Guess under the circumstances we will have to excuse him. Mr. Morris E. Gregory is to lead in the discussion of this subject.

Harold Copping, Kankakee, Ill.

General Discussion.

M. E. Gregory: I did not know what branch of this topic Mr. Copping was to take up. Fuel and labor economy comes pretty close to all of us today. I was startled to see the increased cost of production in my own plant. I started out to see how and where we could overcome it. I started at the boilers, of which we have four large ones. I talked the matter over with my machinist, of how we could cut the cost of fuel, and after looking over the plant very carefully, we came to the conclusion the steam piping was wrong. We spent $750 changing the steam pipes. The first ten days after we had put in the steam pipes, properly covering every piece of pipe, in order to safeguard ourselves in every way, we found we had a saving of $9.70 per day for the ten days succeeding the change, over the ten days preceding it. So we took out the steam pipes all over the entire plant, and I hope by the time I get back to find they are saving $10 a day more. I offer this as a suggestion that all of you who have not seen to it previously, should not lose sight of covering your steam pipes properly. To return the hot water to your boiler takes coal to heat the water. You can find in more ways than one just that a little leak costs tons and tons of coal. You have got to watch the leaks and watch them carefully.

Labor economy: That is one big problem. It is hard to know how to handle them. We think of it in terms of wages and we talk to the men. They shrug their shoulders and then they go to another place and say they get more money. We are spending some sleepless nights trying to overcome this trouble. We are putting in some conveyors. I have ordered one, and I am going to order more portable electric conveyors. The great trouble with the average labor-saving device, as I told one man here who has a very nice scheme, it is all right for a new brickyard, but what we want is one for an old brickyard. We want someone to come to our rescue right now. I am not able to give you any figures on the saving in this conveyor proposition as yet, but may be able to later on.

We are using pyrometers in the kilns to reduce the costs. I have called in my foremen and explained the situation to them and offered a prize to the man who will make the best suggestion every week for the benefit of the business. Every Monday morning at 10 o'clock we suspend business, so far as the foremen are concerned, and they come to the office and we have a talk. The first week they would not talk much. The second week they began to loosen up and give ideas, and, gentlemen, you will be surprised how much these fellows will loosen up and talk and give ideas. If you will offer a prize for the best suggestion and let them appoint a committee to decide who gets the money, you will be surprised how much they will help. If there is anyone who can help it is the men on the yard, if you can get their confidence and get them to help you, and I do not think you can do it in any other way. (Applause.)

Ex-President M. E. Gregory, Corning, N. Y.

L. J. Brenner, Cannelton, Ind.: Just in that connection with the suggestion brought out. I have been in the business just a short time, but so far as help is concerned; if the man at the head of the business will give the labor a little consideration, he will get a great deal more out of them. They will give you more than you think. That is just the thought I wanted to bring out in connection with Mr. Gregory's talk. You can help your labor more in this way than you think for, and in turn they will help you.

President Clippert: These talks have been very interesting and if there is nothing more along this line we will proceed with the program. The next on the program I see is a paper by Mr. H. C. Kleymeyer, on "Brickmaking the Hoosier Mr. Kleymeyer we will pass on to the next.

BRICKMAKING THE HOOSIER WAY.

H. C. Kleymeyer, Evansville, Ind.

Mr. Chairman, Ladies and Gentlemen: I was given the subject by our worthy secretary "Brickmaking the Hoosier Way" (illustrated). I am sorry to have to disappoint you in the illustrations, as we did not have any views of our plant when his request came to hand, and since then our plant has been covered with snow. I will do the best I can and give you a word picture of our way of manufacturing brick, down in what we call "the pocket" of our good old Hoosier state.

It is often best to have one good way of doing things and sticking to it, but it seems that our ideas ran along three ways, which was not from choice, but as a result of circumstances. To explain, I might mention we are operating three plants, making brick by three systems, soft mud, stiff mud and dry press; burning them three ways, by up draft, down draft and continuous kilns; using three kinds of power, electric, steam and crude oil engine power. I might say we have lately discontinued the use of the dry press system of making and the up draft kilns for burning.

At our West Side Plant we manufacture face and common brick, using a mixture of shale and surface clay. At our North Side plant we manufacture soft mud brick, using a mixture of surface clay, one being a tough bottom clay also suitable for manufacturing tile, and the other a loam sandy clay, which we mix fifty-fifty. At our East Side Plant we manufacture face and common brick, drain and building tile, using a tough surface clay underlaid with a strata of coarse sand, which we mix in the course of manufacturing.

On account of the varied character of our material at all of our plants, we have had to study out several plans to get the proper mixture and the machinery to work this mixture successfully to make first-class brick.

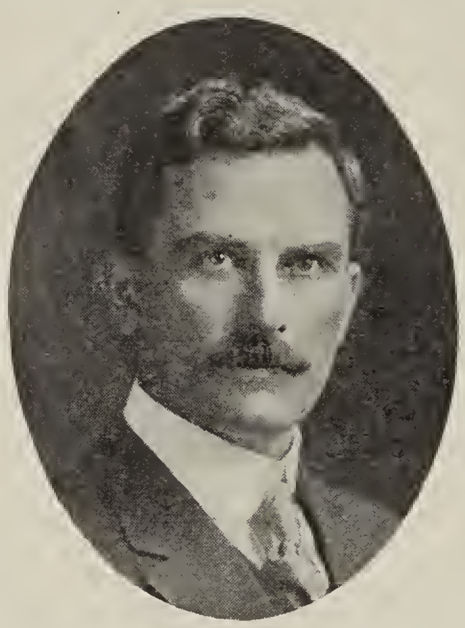
Our West Side Plant is equipped with a full line of stiff mud machinery, dry pan and pulverizer, a clay storage shed of one million brick capacity, electric power, continuous and down draft kilns. Our shale pit runs from 20 feet to 50 feet deep, 30 per cent. surface clay, 30 per cent. brown plastic shale and 40 per cent. of hard blue non-plastic shale, which makes a very good face and building brick when properly mixed. The blue shale is so hard that it requires crushing before being fed to the dry pan and pulverizer. This we formerly did with a jaw rock crusher, which worked all right as long as all of the material was dry, but when wet, sticky clay was mixed with the shale our grinding capacity would drop 50 per cent., as clay would stick to the jaws of the crusher and would not release itself. To overcome this trouble, we built a machine ourselves at about one-third of the cost of a rock crusher, which acts as feeder, at the same time reducing large lumps of shale to the proper size for the dry pan and pulverizer. I would call this machine nothing else than a granulator, but you may say it must be "some granulator" to take care of shale that requires passing through a rock crusher before a dry pan could handle it, but I assure you you would be surprised to see how small and simple this machine is. The shaft is steel, 4 inches square, 6 feet 6 inches long between bearings; the tub is 5 feet long, leaving an 18-inch opening at the end for the material to discharge on a belt, which feeds directly into the pulverizer. It is single geared, the large gear being 36 inches in diameter, 4½ inches face, 2 inches pitch. The pinion is 9 inches in diameter, making one to four ratio. The friction drive pulley is 8-inch face, 36-inch diameter, and the speed of the feeder shaft about 16 R.P.M.

The success of the granulator lies in the knives, which are 8 inches long from the shaft, having a square hub, which we slip on from the end of the shaft, and are made of manganese steel. We had quite a bit of trouble when we first started using this machine with all new knives, which proved to be too long at the receiving end. When the knives are worn, we only renew four at one time, always keeping the short ones at the receiving end and the long ones at the discharge end. The short knives get the first chance at the large lumps, which are reduced to about 6 inches and smaller before the material is discharged on the belt. On account of the large amount of clay, it sometimes happens the loaders are unable to load shale for several cars, and to provide for a proper mixture we have provided a second granulator for the clay, and work the two in tandem, discharging on the same belt. The conveyor belt running under the first granulator and direct to the pulverizer. Each granulator is provided with a hopper holding about 6 cubic yards, and feeds the material into the granulator from the end, sliding down the hopper as it is worked out. The granulator handling the clay we run very slow, and, as stated before, discharges on the same belt that handles the shale; the clay and shale are mixed as they go through the pulverizer. From there the material is elevated to the screens, conveyed overhead and dropped into the clay storage or delivered to the pug mill hopper as we choose.

We reclaim the ground clay out of the storage by an underground conveyor, aiming to take about three-fourths out of the storage and one-fourth direct from the grinding department. On account of the storage shed, our grinding department is run independently from the manufacturing end. Our electric power is divided into three groups, using one large motor for each, the clay grinding department, the brickmaking department, the dryer fans and kiln draft. I might mention we have our motors hooked up just a bit different than you usually find. We use one motor of sufficient size to handle each group and belt direct from both sides of the motor to the machinery. To explain, for instance, the brick machine and pug mill. The drive pulleys are about 12 feet apart. The pulley that drives the brick machine is close up to the motor on one side and the pug mill is driven by having an extended shaft of proper length coupled to the motor by flexible couplings and using Hyatt roller bearings. This extended shaft also acts as a countershaft to take care of elevators and conveyors. One hundred horsepower takes care of the brick machine department easily, making at the rate of 8,000 brick per hour.

We have our waste heat dryer and continuous kilns so arranged that one motor, consuming 35 horsepower, runs two large fans. The wheel of the waste heat fan is 12 feet in diameter, and the exhaust fan for the dryer 10 feet in diameter. When we built our continuous kiln eleven years ago we used a stack 150 feet high for draft, the top, or 30 feet of which, had to be taken down, as it was in bad shape, the walls being only 13 inches and the gases ate out the mortar, causing the bricks to fall out.

Instead of rebuilding the top of the stack to its proper height, to give us sufficient draft, we discontinued the use of this stack and connected our forty-chamber Haigh kiln to the exhaust fans of the dryer, and are now using the short continuous kiln stack for a battery of 5, 30 and 35 feet diameter down draft kilns, which gives us ample draft in water smoking, and never being troubled with a cold stack. The fan combination works fine. We dry 60,000 building brick every day in a fourteen-track Rodgers dryer, furnishing draft for forty-chamber continuous kiln, pumping our water and making our light for the plant all with one motor, and consuming only 35 horsepower. This motor is belted to the fans with an extended shaft, the same arrangement as used in the brickmaking machinery. We attribute this low consumption of power to the slow speed of our fans, the 12-foot fan running 106 R.P.M. and the 10-foot fan 130 R.P.M. We find that this does the work, and you know speed takes power, and power costs money.



H. C. Kleymeyer, Evansville, Ind.

We burn both face and common brick in the continuous kiln, and use the down draft for our brown to black face brick. We have found the continuous kiln to be a life saver, not only in these times of scarcity of coal and high prices, but before, when coal was cheap and plentiful. We figure it takes just about one-half the coal to burn 1,000 brick in the continuous kiln as it does in the down draft.

We built the down draft kilns after we had the continuous on account of the fact that we could not get dark colored face brick in the continuous and had to build down draft to enable us to get the proper reducing condition in the kiln to get the colors we wanted.

At our North Side Yard, as stated before, we manufacture soft mud brick, using two kinds of surface clay, which we mix fifty-fifty, so we use a pug mill for a granulator, having a tub 12 feet long, with opening in the bottom at the center of the tub, on top of which we have built a double hopper, one for each kind of clay, of about three yards capacity. Half of the knives are right-handed and the others left-handed, both working the clay toward the center of the granulator and discharging direct into the disintegrator.

At this yard we discontinued the up draft system of burning and are now using our second Haigh continuous kiln, using the waste heat for drying. We have the same arrangements here as at our West Side Plant and use a 20 horsepower motor, which is belted to a counter shaft and operates the 12-foot waste heat fan for drying, an 8-foot fan furnishing draft for twenty-five-chamber continuous kiln. We find we only consume 16 horsepower to do this work. We use steam boiler and engine for power in making brick.

We found the motor saved us considerable money on account of not needing a man to keep up steam at night, on Sundays and other off days.

Our East Side plant is still in the making, having built four new 32-foot down draft kilns and installed a waste heat dryer, the fan of which is run by a Fairbanks-Morse Semi-Deitzel crude oil engine, which is doing good work. The balance of the plant is just an ordinary stiff mud plant, and nothing above the ordinary.

I want to extend to all of you a hearty invitation to visit us and give me a chance to show you better than I can tell you how we make brick in "The Old Hoosier State." (Applause.)

President Clippert: This has been quite an interesting paper. If there is no question any member would like to ask Mr. Kleymeyer we will pass on to the next.

Sizes of Brick.

Douglas F. Stevens: Mr. President, before we proceed with the next paper, I would like to submit a matter for the consideration of the resolution committee. It is the matter of standard sizes of brick. It has been so many years since the N. B. M. A. has acted on the subject that you have forgotten what standard sizes of brick were adopted by the N. B. M. A. in 1893 and reaffirmed in 1899, as follows:

Common Brick	8¼ x 4 x 2¼ inches
Paving Brick	8½ x 4 x 2½ inches
Pressed Brick	8⅜ x 4 x 2⅜ inches
Roman Brick	12 x 4 x 1½ inches
Norman Brick	12 x 4 x 2⅜ inches

It would seem to me proper that the National Brick Manufacturers' Association go on record approving the action of the other organizations in special lines of claywork that have adopted standards. The American Face Brick Association has taken action in this matter. Definite standards were submitted a year ago and were adopted at the French Lick meeting last December. The standard size for face brick is 8x2¼x 3¾. As common brick are so often used in the wall in bond with face brick it seems to me proper that the sizes should conform. I understand the manufacturers of the St. Louis are making a common brick that size. I am a face-brick manufacturer myself. The standard size of paving brick as I understand it is 8x4x3. I think the other sizes which the N. B. M. A. adopted for Roman and Norman brick should be made to conform with the face-brick standard, and I would, therefore, like to offer a resolution that the National Brick Manufacturers' Association adopt or recommend as a standard size of brick the size that has been adopted by the other associations. I have mentioned it here so it can be discussed by the resolution committee.

Secretary Randall: I would like to say that the subject of standardization was considered by Mr. Noyes and the representatives of the various brick organizations at the conference in Washington last month. Mr. Noyes very wisely suggested that one measure of economy would be a standard for the purpose of cutting out non-essentials in the way of shapes. The government favors the simplifying of products as well as processes. If we can simplify the products we can economize in manufacture.

Mr. Sibley: I would suggest that the matter be left to the committee on technical investigation or the executive committee for the reason that I know the paving brick people have not really adopted a universal size, but have the matter under discussion, and have three sizes to suit the various districts. If we adopt one size to suit ourselves it would not suit the South or Indiana or Illinois or Ohio. I think this is a question that cannot be thoroughly threshed out in the time alloted to this convention. If referred to the technical committee a complete report could be made next year that would be acceptable to the various branches of the industry.

B. H. Richards, Edwardsville, Ill.: I belong to the St. Louis Brick Manufacturers' Association, and last year we spent considerable time in discussing this question of adopting a standard size of brick. Some fellows make their brick a little thinner and some a little shorter, and while not a great deal of difference, still there was some difference and it made trouble occasionally. Therefore, after considerable discussion we have adopted for that neighborhood for common brick 8½x4½x4 in the green size, which makes the finished brick 8x3¾x2⅛, or burned brick. I believe 2½ is a good size for burned brick. It approaches more nearly the brick made in the great Chicago and New York district, which are smaller than usually made over the West. It gets us nearer the size of face brick, but the smaller brick takes a little less fuel to burn, and incidentally the contractors have to buy a few more.

Mr. Stevens: I accept Mr. Sibley's suggestion that the Paving Brick Association has not permanently adopted a standard. I think we might leave that open. As I stated, I am a face-brick manufacturer and am not familiar with the standardization of other brick, but the American Face Brick Association have adopted a size after a year of test, and I think it would be entirely proper for the N. B. M. A. to approve it and take similar action in regard to common brick, for that is necessary for use in connection with face brick. The paving brick size can be left open until the Paving Brick Manufacturers' Association adopt their standard, and I will be glad to amend my resolution to that effect.

George B. Luckett, Crawfordsville, Ind.: I would like to emphasize the importance of Mr. Stevens' suggestion. If the National Brick Manufacturers' Association establishes one standard, and the American Face Brick Association establishes another, it makes a great deal of confusion. I think it is very desirable and will simplify the question very much. The American Face Brick Association investigated the matter very carefully and I think the size meets the approval of all the manufacturers. A good many of the face brick manufacturers also make common brick and they appreciate the importance of having common brick of the same size as the face brick. It seems to me it would be quite unfortunate to delay it for another year.

Secretary Randall: I would suggest the advisability in this connection of appointing a committee of three to get together on this question and bring it before the convention.

President Clippert: I think that a wise suggestion, and will appoint Mr. Stevens, Mr. Luckett and Mr. Richards members of that committee. What is next Mr. Secretary?

Secretary Randall: We now have an illustrated lecture or paper by Mr. J. G. Bragg, of the Bureau of Standards, Pittsburgh, who is to give the final Report of the Brick Pier Tests of the Co-operative Investigation Between the N. B. M. A. and the Bureau of Standards.

A REPORT ON THE CO-OPERATIVE BRICK PIER INVESTIGATION BETWEEN THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION AND THE U. S. BUREAU OF STANDARDS.[1]

BY J. G. BRAGG, PITTSBURGH, PA.

Mr. President and Gentlemen of the Convention:

In 1913-14 the Technical Committee of the National Brick Manufacturers' Association planned a series of large brick pier tests and arranged to have these tests made at the Pittsburgh Laboratory of the Bureau of Standards. Two progress reports have since been submitted to this Association, one in 1915 and the other in 1916. It was hoped that we would be able at this meeting to show you the final results of this investigation in a Bureau publication. Since it was not possible to do this, however, I am here to present to you a brief abstract of the final report of the completed investigation which has been prepared and submitted to the publication committee of the Bureau.

In planning this investigation your committee had before them results of previous investigations which were in a measure incomplete or which were representative of conditions much more favorable than may be realized in practice.

The purpose of this investigation was, therefore, to make a more comprehensive study of the strength developed by brick piers of moral size using in their construction such materials and grades of workmanship as are available in the United States.

The variables considered were: (1) the quality of bricks employed with respect to grade and geographical location, (2) the quality and kind of mortar, (3) the grade of workmanship employed and (4) the bonding of courses or method of laying the bricks.

Bricks were obtained from the Pittsburgh, Chicago, New York and New Orleans districts. In the first of these, the Pittsburgh district, three kinds of mortar were used: (1) a Portland cement mortar, 1 part cement to 3 parts sand, (2) lime mortar, 1 part lime to 6 parts sand, and (3) a combination lime and cement mortar, composed of 1 part (15% lime, 85% cement) to 3 parts sand. The combination cement-lime mortar was used exclusively in all piers of the remaining three districts.

Wherever it was possible to do so three grades of brick were obtained from each district; grade 1 being a hard burned or best product; grade 2, medium burned or considered as common, and grade 3, soft burned or poorest product marketed.

The variations in bond were as follows:

1 Header course to 1 stretcher course.
1 Header course to 3 stretcher courses.
1 Header course to 6 stretcher courses.

The original program as outlined by the committee included tests of 144 piers 2½ feet square by 10 feet high. As the work progressed, however, it was found that certain variables did not yield data of sufficient importance to warrant such intensive experimentation on piers of this size. Also in an investigation of this nature considerable difficulty is experienced in obtaining materials. The original program was, therefore, curtailed to a great extent so that the total number of piers tested was 50 instead of 144. All piers were built by contract with a view to obtaining a grade of workmanship comparable with common practice. However, the workmanship is believed to be somewhat above the average.

J. G. Bragg, Pittsburg, Pa.

The piers were tested in the 10,000,000 pound Olsen compression machine, the loads varying from 300,000 to 3,500,000 pounds according to the grade of bricks and mortar used in the construction of the piers. Records were made of the character of failure and amount of compression of the piers for various degrees of loading. Transverse, compression and absorption tests were made on single bricks from each lot used and from the results obtained formulæ are derived for use in computing the strength of brick piers.

The original report which has been prepared includes also a resume investigation by Howard[2], Macgregor[3], McCaustland[4], and Kreuger[5].

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[1] By permission of the Director of the Bureau of Standards.

[2] U. S. Reports of Tests of Metals and other Materials 1884-1886, Eng. Record, March 22, 1913, Clay-Worker, March, 1913.

[3] Tests made by Prof. J. S. Macgregor, Columbia University, Bulletin J, Hydrated Lime Bureau of the National Lime Mfg. Association.

[4] E. J. McCaustland, Transactions of the Association of Civil Engineer of Cornell University for 1900.

[5] By Prof. H. Kreuger, Technical High School, Stockholm, Toning-Ztg., 40, 1916, Clay-Worker, July, 1916, and August, 1916.

Testing of Individual Bricks.

Twenty transverse tests were made on each lot of bricks received except in the case of grade 3 from the Pittsburg district. Of this lot only enough material was available for ten tests. No bricks were culled because of warpage or cracks due to burning. The tests were made on a small Olsen hand power machine of 10,000 pounds capacity. Each sample was supported at the ends on round steel bars 1 inch in diameter. These bars were spaced 7 inches center to center, making a 7-inch span for all tests. Because of the warped condition of certain samples it was necessary in some cases to place fillers between the roller and the brick at one end of the roller. The load was applied at the center of the 7-inch span through a small adjustable hemispherical bearing block resting on a ¾-inch diameter round steel rod. From these tests the moduli of rupture were computed by the formula:

$$R \text{ equals} \frac{3\,wl}{2\,bd^2} \text{ in which}$$

R equals modulus of rupture (unit traverse strength).
w equals breaking load in pounds.
l equals span in inches.
b equals breadth in inches.
d equals depth in inches.

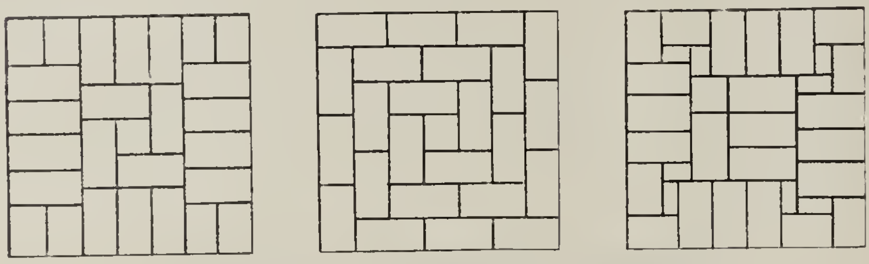

Fig. 1. Arrangement of bricks in courses. (a) Header course used in all piers of main investigation. (b) Stretcher course used in all piers. (c) Header used in Pier 48.

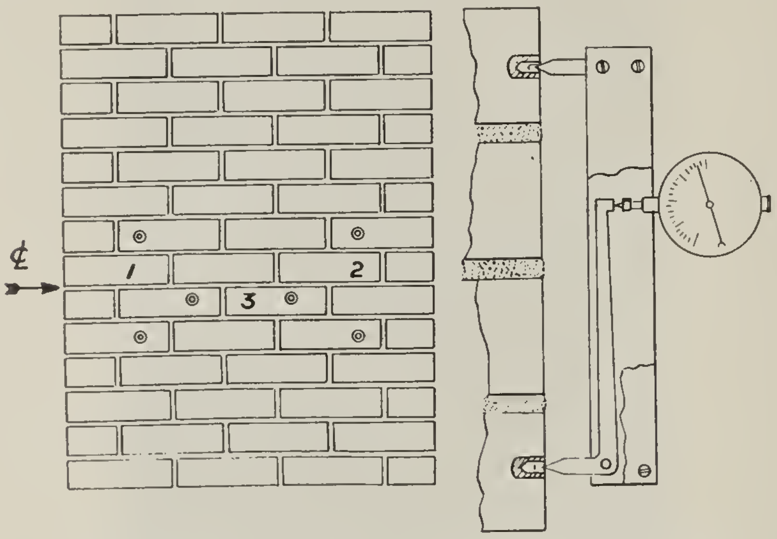

Fig. 4. Showing location of Berry Strain gage stations on each face of pier and method of seating gage points.

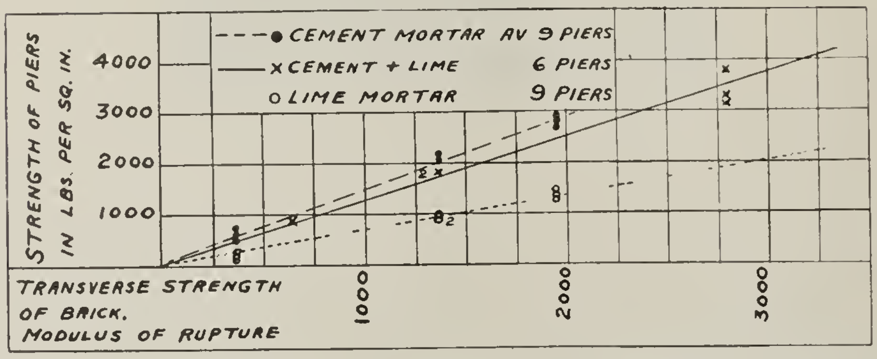

Fig. 15. Showing relation of transverse strength of individual bricks to compressive strength of piers. Representing three grades of brick and three mortars from Pittsburgh district.

COMPRESSION TESTS.

Of the half bricks left from the transverse tests ten samples were tested on edge and ten samples were tested flat. Specimens were selected which had broken through the center in the transverse test so that the sizes were approximately the same. All samples were capped top and bottom with plaster of paris with as nearly as possible uniform thickness of cap. Lack of parallelism of the two bearing surfaces was compensated for in the testing machine by an adjustable hemi-spherical bearing block.

ABSORPTION TESTS.

Absorption tests were made on the samples to be tested in compression. The samples were first placed in the drying oven and dried to a constant weight, after which they were immersed in water for 48 hours and again weighed. The percent absorption was then calculated in terms of the dry weight as follows:

$$\text{Percent absorption equals} \frac{w_1 - w}{w}\text{, in which}$$

w equals dry weight,
w_1 equals the weight after 48 hours' immersion in water.

DERIVED DATA.

Relation of Transverse Strength of Bricks to Compressive Strength of Piers.

All efforts of investigators to establish ratios between the compressive strengths of the bricks and the ultimate strength of the piers have met with small success, except in isolated cases where the conditions pertaining to the erection of the test piers were ideal. Observations recorded in the first few tests of the present investigation pointed to certain characteristics of failure indicating that the transverse strength of the bricks might bear a close relation to the ultimate strength of the piers. For this reason, the transverse strength was determined on each lot of bricks and the average unit transverse strength or modulus of rupture obtained. These averages have been plotted as abscissas and the unit loads sustained by the piers as ordinates and are shown in Figs. 15 and 16. Fig. 15 includes only piers of the Pittsburgh district representing three grades of mortars, while Fig. 16 includes piers from all districts laid in cement-lime mortar. In both cases it is shown that the transverse strength of the bricks is proportional to the compressive strength of the piers. For use in computing the strength of brick piers the empirical formula

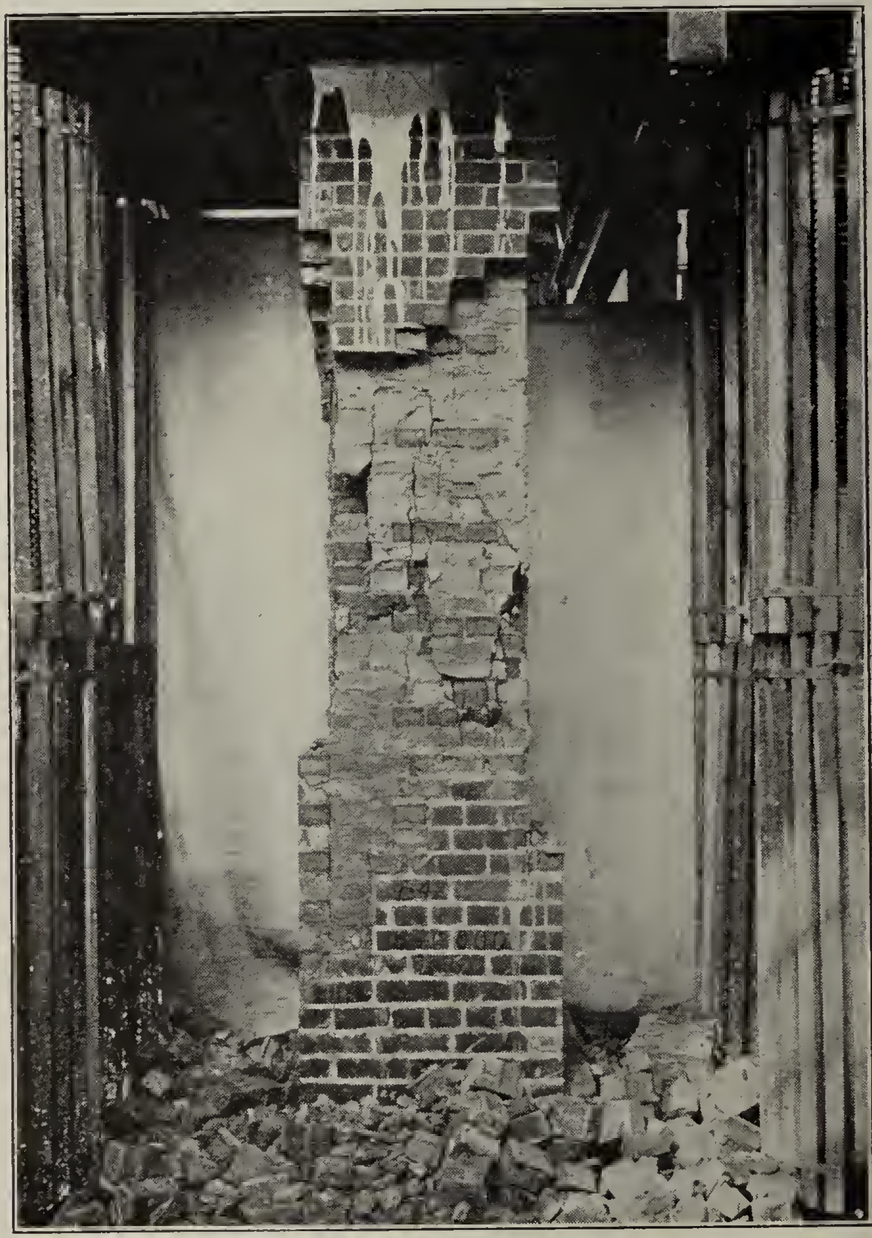

Fig. 10. Pier B 42, Serial No. 39. Grade 3 bricks from the New York District laid in cement-lime mortar.

P equals KR is derived from these plots, in which

P equals the compressive strength of the pier in pounds per square inch.

R equals the modulus of rupture of the bricks.

K equals a constant depending upon the kind of mortar used.

The values of K for mortars included in these tests are as follows:

For 1 part portland cement to 3 parts sand, K equals 1.45.

For 1 part (15 percent lime, 85 percent cement) to 3 parts sand, K equals 1.25.

For 1 part hydrated lime to 6 parts sand, K equals .65.

Relation of Compressive Strength of Bricks to Compressive Strength of Piers.

The average unit compressive strength of the half bricks tested flat and on edge have been plotted in the same manner as the modulus of rupture, and are shown in Figs. 17 to 20, inclusive. Figs. 17 and 19 are representative of the three different grades of mortar, while Figs. 18 and 20 include piers of all districts laid in cement-lime mortar. In these plots it is shown that the compressive strengths of the bricks is proportional to the ultimate compressive strength of the piers and the formula

P equals Kp is derived, in which

P equals the unit compressive strength of the pier,

p equals the unit compressive strength of the bricks,

K is a constant depending upon the grade of mortar.

The following table gives the value of K for the grade of mortar employed:

Bricks Tested.	*Mortar.*	*Value of K.*
Flat	1 cement to 3 sand by weight	.27
Flat	1 (15 pct. lime, 85 pct. cement) to 3 sand by weight	.26
Flat	1 lime hydrate to 6 sand by weight	.11
On Edge	1 cement to 3 sand by weight	.32
On Edge	1 (15 pct. lime, 85 pct. cement) to 3 sand by weight	.30
On Edge	1 lime hydrate to 6 sand by weight	.14

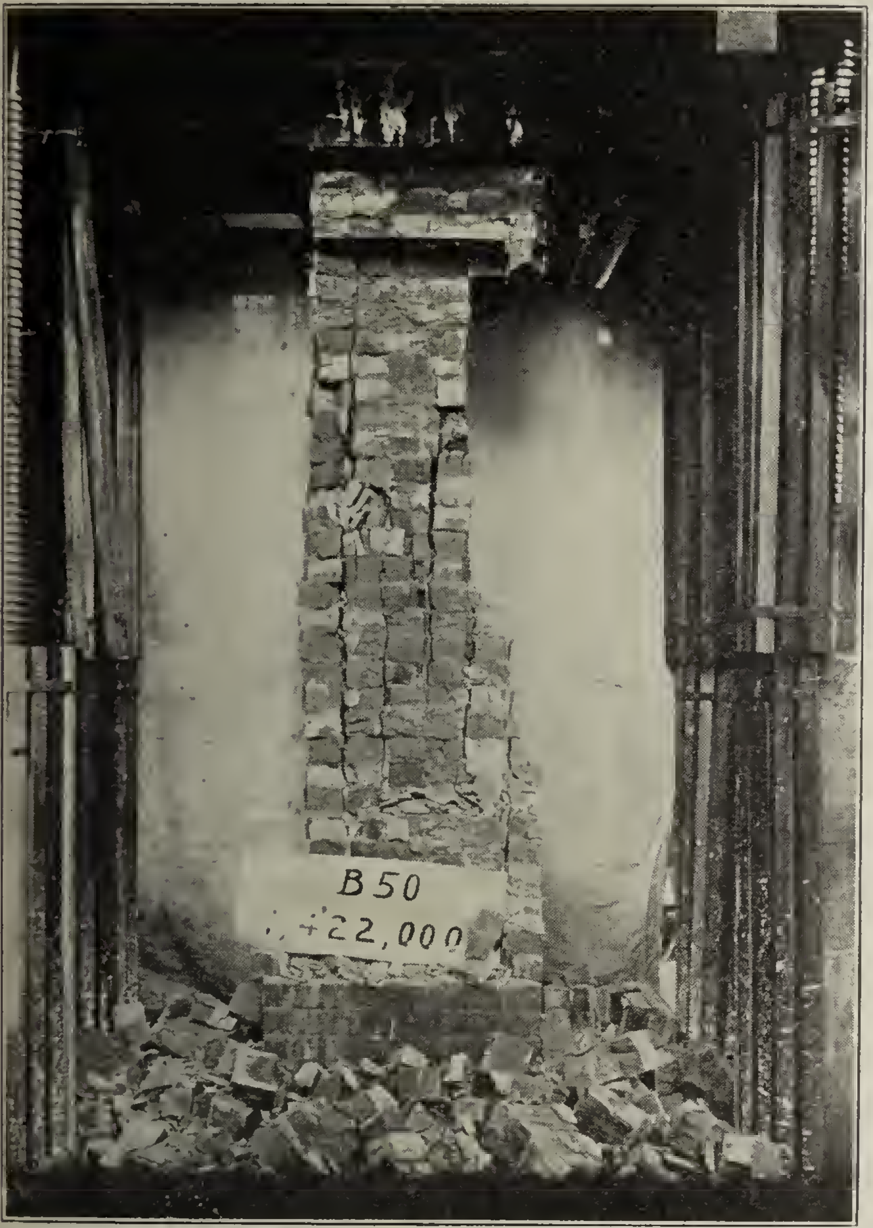

Fig. 12. Pier B 20, Serial No. 30. Grade 3 bricks from the New Orleans District laid in cement-lime mortar.

MODULUS OF ELASTICITY.

The modulus of elasticity of the piers has been determined from the stress-strain curves obtained from the full length compression readings. Representative stress-strain curves are shown in Fig. 21. This figure shows the relative stiffness of piers built of different grades of bricks and mortars. There is very little difference in the modulus of elasticity for piers of cement mortar and those of cement-lime mortar in which bricks of the same grade were used. There is a big difference, however, in the modulus of piers of these mortars and those of pure lime mortar. It may also be seen that in the case of cement and cement-lime mortars, the piers of low grade bricks have a considerably lower modulus than those of the higher grades, while very little difference is apparent in the case of pure lime mortar.

LATERAL STRAINS.

The type of failure peculiar to brick piers indicates an outward flow of the materials with a consequent tension failure of the individual bricks. Prof. J. B. Johnson[6] implies that for this reason the tensile strength of the brick is a very important quality. Such a condition can be possible only if there is a tendency of the mortar in the horizontal joints to flow faster than the bricks adjacent to the joints. In the present investigation strain measurements were made in the horizontal joints and on the adjacent courses of brick. The result obtained on a representative pier is shown in Fig. 24. This diagram shows that the strain is sometimes greater in the joints and sometimes greater in courses adjacent to the joints. When the measurements on the four faces of the pier are averaged it is shown that there is no appreciable difference between the strain in the joints and the strain in the adjacent courses.

TYPE OF FAILURE.

The type of failure observed in this investigation is in agreement with previous studies of the compressive strength of brick masonry. It may therefore be said that failure by vertical cleavage is common to all concentrically loaded brick piers. The first indication of failure appears at about 75 per cent. of the ultimate compressive strength of the pier and is indicated by the appearance of hair-size vertical cracks in the individual bricks. These cracks usually start at or quite near the center of the bricks where the bricks break joints with the adjacent courses. The cracks gradually extend to other courses, and finally, becoming confluent, they extend almost the entire length of the pier. Soon thereafter final failure occurs, accompanied by a spawling off of the outer rings of bricks. In the case of piers of grade 1 bricks laid in lime mortar, sharp reports are heard as the cracks begin to appear, and they increase in frequency with additional load. These reports are peculiar to the failure of bricks by flexure as distinguished from sounds accompanying compression failure. Except in cases of piers laid in mortar of equal or greater strength than the bricks, it is seen after failure that the bricks are broken in two or more pieces and very little crushing of the bricks is apparent. All indi-

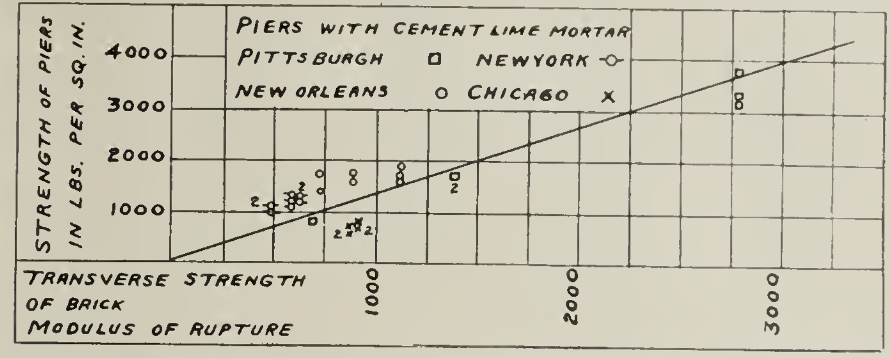

Fig. 16. Showing relation of transverse strength of individual bricks to compressive strength of piers, representing three grades of bricks from four districts. All piers laid in cement-lime mortar.

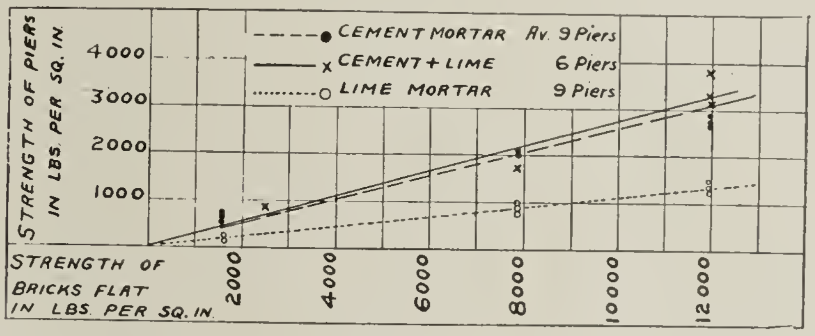

Fig. 17. Relation of compressive strength of single bricks (flat) to compressive strength of piers, representing three grades of brick and three mortars from Pittsburgh district.

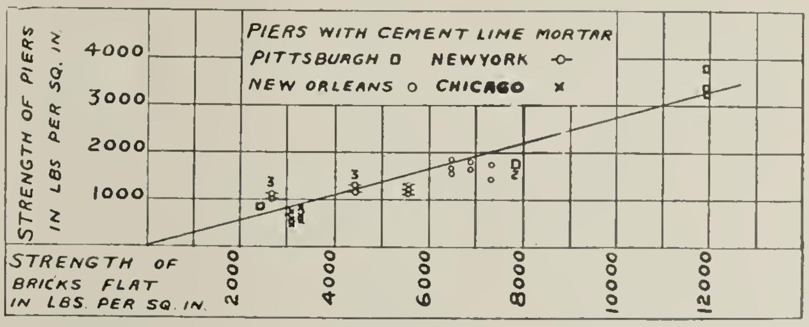

Fig. 18. Relation of compressive strength of single bricks (flat) to compressive strength of piers, representing three grades of brick from four districts. All piers laid in cement-lime mortar.

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[6] Johnson's Materials of Construction, 4th Ed. 1907, Page 654.

cations point to a transverse failure of the individual bricks as the cause of incipient failure of the pier. In general, conditions are more favorable to this type of failure of the bricks than to the failure by compression. In most cases the mortar has less stiffness than the brick. Unless all joints are of equal thickness this will cause unequal loading of the individual bricks as the pier is compressed. The same thing will occur when the joints are of equal thickness, but if at the same time the mortar is not distributed over the entire bearing surface of the brick. Irregularity in the shape of the bricks will result in varying thickness of mortar on their surfaces.

The transverse strength of a single brick varies as the breadth, the depth squared, and inversely as the distance between support, or

P equals $\frac{Kbd^2}{1}$. In this equation,

P equals the breaking load of the brick, in pounds,
b equals breadth in inches,
d equals depth in inches,
1 equals span in inches,
k is an experimental constant depending upon the grade of brick.

As an illustration of how the transverse strength of a single brick varies with the depth, the following values are substituted in the above formula:

K equals variable for different grades of brick equals 1000.
b equals breadth of brick equals 4 inches.
d equals depth of brick equals 2 inches.
1 equals distance between supports equals 7 inches.

Then for a brick in a flatwise position supported at the ends and loaded at the center,

P equals $\frac{1000\times4\times4}{}$ equals 2287 pounds.

When the brick is tested in the edgewise position the breadth is decreased from 4 inches to 2 inches and the depth is increased from 2 inches to 4 inches, then

P equals $\frac{1000\times2\times16}{}$ equals 4574 pounds.

TABLE VIII

DETAILS OF CONSTRUCTION AND SUMMARY OF TEST DATA PIERS OF MAIN INVESTIGATION

BRICKS													TIERS			
Construction Data								Test Data					Test Data			
Serial No.	Mark on Pier	District	Grade Brick	Bond Header to Stretcher	No. of Courses	Kind of Mortar	Height of Pier in Feet	Age in Days	Area in Square Inches	Maximum Load in Pounds	Load in lbs. Per Sq. Inch	Modulus of Elasticity	Comp. Strength Flat Lbs. Per Sq. Inch	Comp. Strength on Edge Lbs. Per Sq. Inch	Modulus of Rupture	Percentage Absorption
PITTSBURGH DISTRICT, CEMENT MORTAR																
1	B13	B	1	1:1	46	1 cement	10.0	30	930	2,520,000	2710	2,500,000	11990	8900	1945	4.08
2	B14	B	1	1:3	46	3 sand	10.0	30	930	2,550,000	2740	3,200,000	11990	8900	1945	4.08
3	B15	B	1	1:6	46	3 sand	10.0	30	930	2,697,000	2900	3,200,000	11990	8900	1945	4.08
4	B17	B	2	1:1	45	3 sand	10.0	32	856	1,714,000	2000	2,250,000	7880	6450	1370	7.46
5	B18	B	2	1:3	45	3 sand	10.0	32	885	1,834,000	2070	2,000,000	7880	6450	1370	7.46
6	B27	B	2	1:6	44	3 sand	10.0	33	946	824,000	870	833,000	2450	2040	675	15.16
7	B 1	B	3	1:1	41	3 sand	10.0	29	1024	524,000	510	700,000	1659	1350	345	16.28
8	B 2	B	3	1:3	41	3 sand	10.0	29	1043	580,000	560	733,000	1659	1350	345	16.28
9	B 3	B	3	1:6	41	3 sand	10.0	32	1024	660,000	650	533,000	1659	1350	345	16.28
PITTSBURGH DISTRICT, CEMENT AND LIME MORTAR																
10	B31	B	1	1:1	45	1 (15% lime	10.0	90	841	3,211,000	3800	3,500,000	11965	10050	2775	1.28
11	B29	B	1	1:3	45	85% cement)	10.0	90	841	2,714,000	3220	3,050,000	11965	10050	2775	1.28
12	B30	B	1	1:6	45	3 sand	10.0	90	841	2,787,000	3300	3,500,000	11965	10050	2775	1.28
13	B20	B	2	1:1	45	3 sand	10.0	33	908	1,594,000	1760	1,550,000	7880	6450	1370	7.46
14	B28	B	2	1:3	44	3 sand	10.0	32	961	838,000	870	750,000	2450	2040	675	15.16
15	B22	B	2	1:6	45	3 sand	10.0	30	878	1,545,800	1760	1,625,000	7880	6450	1370	7.46

TABLE IX.

DETAILS OF CONSTRUCTION SUMMARY OF TEST DATA SUPPLEMENTARY PIERS

PIERS												BRICKS USED			
Construction Data							Test Data					Test Data			
Pier No.	Mark	District	Grade	Type of Bond	Kind of Mortar	Height of Pier	Age in Days	Area in Sq. In.	Load in Pounds	Load in Lbs. Per sq. in.	% Gain in Strength	Comp. Strength Bricks Flat Lbs. per sq. in.	Comp. Strength Bricks on Edge Lbs. per sq. in.	Modulus of Rupture Bricks	% Absorption
47	B23	B	2	1 Header type (a) Fig. 1 to 1 Stretcher	(15% lime) 1 (85% cement) to 3 sand	5′ 0″	30	915	1,580,000	1730	0	2450	2040	675	15.16
48	B24	B	2	1 Header type (b) Fig. 1 to 1 Stretcher	(15% lime) 1 (85% cement) to 3 sand	5′ 0″	30	915	1,678,000	1840	+6.4	2450	2040	675	15.16
49	B25	B	2	Same as No. 47 with 18 gauge No. 2 galvanized iron wire mesh in every joint	(15% lime) 1 (85% cement) to 3 sand	5′ 0″	30	924	2,100,000	2270	+31.2	2450	2040	675	15.16
50	B26	B	2	Same as No. 47 with 18 gauge No. 2 galvanized iron wire mesh in every fourth joint.	(15% lime) 1 (85% cement) to 3 sand	5′ 0″	30	930	1,364,000	1470	—15.0	2450	2040	675	15.16

This is twice the strength developed in the flatwise position. It follows then that any method of construction which would increase the depth of the bricks or component parts of the pier should increase the strength of the pier. In the Watertown Arsenal tests, this was done by laying the bricks on edge, also by breaking joints every sixth course when laid flatwise and every third course when laid on edge. In these tests face brick were laid in 1:1 cement mortar. The following table shows the gain in strength due to the method of construction:

Method of laying bricks.		*Percentage gain in strength.*
Bricks flat.	Joints broken every course..............	0
Bricks flat.	Joints broken every sixth course.........	7.6
Bricks on edge.	Joints broken every course..............	43.8
Bricks on edge.	Joints broken every third course.........	57.3

It is quite probable that the gain in strength due to the method of laying would be greater for softer mortars.

TABLE XI
REPRESENTATIVE TEST LOG OF SINGLE LOT OF INDIVIDUAL BRICKS
GRADE I BRICKS FROM DISTRICT B
COMPRESSION, TRANSVERSE AND ABSORPTION TESTS

TRANSVERSE TESTS

Span in Inches 1	Width in Inches b	Depth in Inches d	Load in Pounds p	Modulus of Rupture 3/2 $\frac{P 1}{b d^2}$	Span in Inches 1	Width in Inches b	Depth in Inches d	Load in Pounds p	Modulus of Rupture 3/2 $\frac{P 1}{b d^2}$
7	3.85	2.30	6300	3250	7	3.85	2.30	3910	2020
7	3.90	2.30	4490	2290	7	3.85	2.30	5300	2740
7	3.85	2.30	5850	3020	7	3.90	2.30	4870	2480
7	3.85	2.30	5800	3000	7	3.90	2.30	5400	2760
7	3.85	2.30	4740	2440	7	3.90	2.30	5360	2740
7	3.85	2.30	5730	2960	7	3.90	2.30	4630	2360
7	3.90	2.30	5870	3000	7	3.90	2.30	5050	2580
7	3.90	2.30	5920	3020	7	3.90	2.30	7230	3690
7	3.90	2.30	5950	3030	7	3.90	2.30	5230	2670
7	3.90	2.30	6075	3100	7	3.90	2.30	4660	2380
					Average of twenty tests				2775

ABSORPTION				HALF BRICK FLAT			HALF BRICK ON EDGE		
No.	Dry Weight Kg.	Wet Weight Kg.	Per cent. Absorption	Dimensions Inches	Load Pounds	Load Lbs. Per Sq. Inch	Dimensions Inches	Load Pounds	Load Lbs. Per Sq. Inch
1	2.876	2.940	2.23	3.6 x 4.3	172,300	11,100	2.3 x 4.2	83,600	8330
2	2.925	2.945	.68	3.9 x 4.2	201,000	12,250	2.3 x 4.3	111,200	11250
3	2.845	2.866	.74	3.9 x 3.75	180,500	12,350	2.3 x 4.1	103,400	10900
4	2.845	2.881	1.26	3.9 x 4.0	201,500	12,750	2.3 x 4.3	92,900	9300
5	2.863	2.878	.53	3.9 x 4.15	175,400	10,830	2.3 x 4.2	124,800	12400
6	2.842	2.864	.77	3.9 x 4.3	219,100	13,050	2.3 x 4.15	79,500	8330
7	2.932	2.975	1.47	3.9 x 4.3	186,000	11,100	2.3 x 4.2	84,300	8720
8	2.866	2.909	1.50	3.9 x 4.2	198,400	12,100	2.3 x 4.25	106,000	10830
9	2.815	2.874	2.09	3.9 x 4.1	186,400	11,650	2.3 x 3.95	69,000	7600
10	2.885	2.937	1.80	3.9 x 4.05	161,700	10,200	2.3 x 4.4	82,700	8180
11	2.854	2.870	.56	3.9 x 3.9	210,200	13,850	2.3 x 4.25	97,000	9920
12	2.920	2.970	1.71	3.9 x 4.4	211,800	12,350	2.3 x 4.05	138,500	14870
Ave.			1.28			11,965			10050

PITTSBURGH DISTRICT, LIME MORTAR

16	B 7	B	1	1:1	45	1 lime	10.0	120	940	1,360,000	1450	725,000	11990	8900	1945	4.08
17	B 8	B	1	1:3	45	6 sand	10.0	120	940	1,197,500	1270	416,700	11990	8900	1945	4.08
18	B 9	B	1	1:6	45	6 sand	10.0	120	940	1,280,000	1360	750,000	11990	8900	1945	4.08
19	B10	B	2	1:1	44	6 sand	10.0	120	906	764,000	840	620,000	7880	6450	1370	7.46
20	B11	B	2	1:3	44	6 sand	10.0	120	906	804,000	890	687,000	7880	6450	1370	7.46
21	B12	B	2	1:6	44	6 sand	10.0	120	900	892,000	990	620,000	7880	6450	1370	7.46
22	B 4	B	3	1:1	41	1 lime	10.0	120	1024	215,500	210	300,000	1659	1350	345	16.28
23	B 5	B	3	1:3	41	3 sand	10.0	120	1024	182,000	178	300,000	1659	1350	345	16.28
24	B 6	B	3	1:6	41	3 sand	10.0	120	1024	129,000	126	270,000	1659	1350	345	16.28

NEW ORLEANS DISTRICT, CEMENT AND LIME MORTAR

25	B 7	D	1	1:1	41	1 (15% lime	10.0	29	841	1,223,000	1450	1,533,000	7340	4910	733	16.80
26	B48	D	1	1:3	41	85% cem'nt)	10.0	29	841	1.475,000	1760	1,533,000	7340	4910	733	16.80
27	B52	D	2	1:1	41	3 sand	10.0	31	841	1,370,000	1630	1,563,000	6880	5490	893	16.40
28	B53	D	2	1:3	41	3 sand	10.0	30	841	1,506,000	1790	1,750,000	6880	5490	893	16.40
29	B49	D	3	1:1	41	3 sand	10.0	30	841	1,580,000	1880	1,833,000	6510	5700	1090	17.10
30	B50	D	3	1:3	41	3 sand	10.0	29	841	1,422.000	1690	1,583,000	6510	5700	1090	17.10
31	B51	D	3	1:6	41	3 sand	10.0	31	841	1,397,000	1660	1,583,000	6510	5700	1090	17.10

NEW YORK DISTRICT, CEMENT AND LIME MORTAR

32	B44	A	1	1:1	45	3 sand	10.0	32	791	921,500	1170	875,000	5630	6440	601	16.40
33	B45	A	1	1:3	45	3 sand	10.0	32	791	1,033,500	1300	875,000	5630	6440	601	16.40
34	B46	A	1	1:6	45	3 sand	10.0	31	791	998,000	1260	875,000	5630	6440	601	16.40
35	B38	A	2	1:1	45	3 sand	10.0	30	784	1,001,000	1280	875,000	4430	5449	616	18.60
36	B39	A	2	1:3	45	3 sand	10.0	31	791	1,011,000	1280	1,125,000	4430	5449	616	18.60
37	B40	A	2	1:6	45	3 sand	10.0	31	791	967,500	1220	817,000	4430	5449	616	18.60
38	B41	A	3	1:1	45	3 sand	10.0	31	791	840,500	1070	484,000	2710	2970	497	19.30
39	B42	A	3	1:3	45	3 sand	10.0	31	791	840,000	1060	667,000	2710	2970	497	19.30
40	B43	A	3	1:6	45	3 sand	10.0	30	791	808,000	1020	600,000	2710	2970	497	19.30

CHICAGO DISTRICT, CEMENT AND LIME MORTAR

41	B35	C	1	1:1	46	3 sand	10.0	32	841	706,700	840	833,000	3200	3010	1180	16.20
42	B36	C	1	1:3	46	3 sand	10.0	29	812	641,500	790	750,000	3200	3010	1180	16.20
43	B37	C	1	1:6	46	3 sand	10.0	30	812	660,500	810	750,000	3200	3010	1180	16.20
44	B32	C	2	1:1	46	3 sand	10.0	30	812	606,500	750	833,000	3150	2710	1140	16.20
45	B33	C	2	1:3	46	3 sand	10.0	30	812	572,000	700	650,000	3150	2710	1140	16.20
46	B34	C	2	1:6	46	3 sand	10.0	30	812	578,500	710	580,000	3150	2710	1140	16.20

EFFECT OF QUALITY OF BRICKS.

The quality of bricks is obviously a very important factor in the strength of brick masonry. While a high compressive strength of the brick contributes to the ultimate strength of the pier, it is shown also that other qualities of the brick are important in their effect on the compressive strength of masonry. Tests show that the transverse strength of the brick bears a close relation to the strength of the pier. In this respect regularity in shape is essential since, if the bricks are irregular they can not be evenly bedded in the mortar, and this will cause the joints to be thicker than is desirable. Also with bricks of equal compressive strength but of varying depth, the piers built of bricks having the greatest depth will develop higher compressive strengths. The degree of absorption is important in its effect on the strength of the mortar. Very porous brick must be thoroughly "wet down" to prevent absorption of the water in the mortar, which in the case of the richer cement mortars is necessary to the proper hydration of the cement. That the quality of brick with respect to strength is of great importance is seen in Figs. 15 to 20, inclusive, which show that the strengths of the piers are proportional to the strengths of the bricks used in their construction.

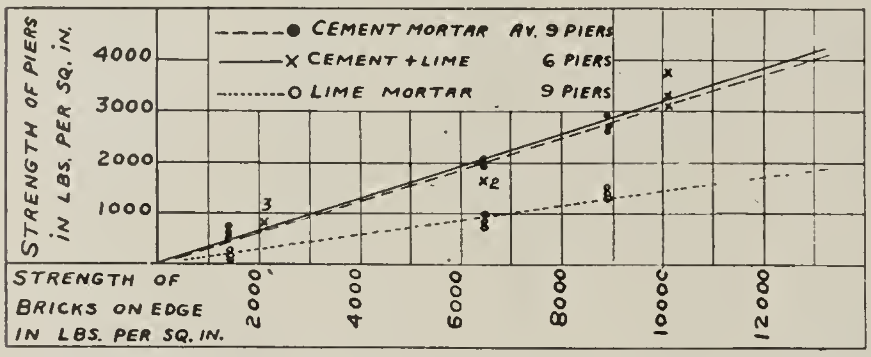


Fig. 19. Relation of compressive strength of single bricks (on edge) to compressive strength of piers, representing three grades of bricks and three mortars from Pittsburgh district.

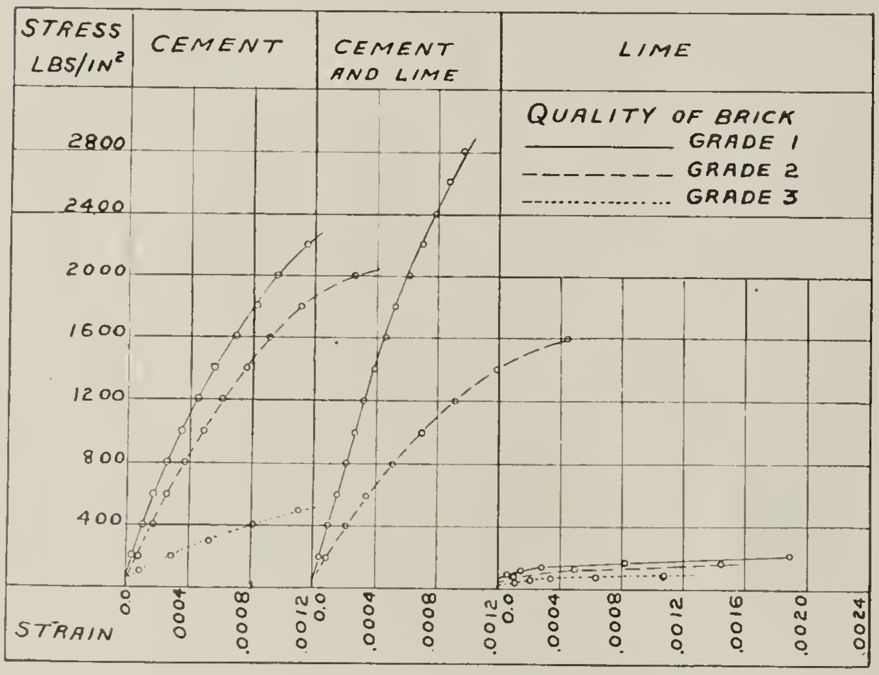


Fig. 21. Stress strain curves showing relative degree of compressibility of the various grades of bricks laid in different kinds of mortar.

EFFECT OF MORTARS.

The importance of proper proportioning of the mortar to be used in brick work can not be emphasized too strongly. A pure portland cement mortar, when tested in the form of cubes or cylinders, develops a higher compressive strength than lime or combination cement and lime mortars. Tests show, however, that piers laid in pure portland cement mortar do not always develop the highest strengths when compared with piers of combination cement and lime mortar. In the present investigation it is seen that there is practically no difference in strength in the piers of pure portland cement mortar and those of the cement-lime mortar. The cement-lime mortar used was proportioned by weight, 15 per cent. of the cement being replaced by hydrated lime. The amount of cement replaced by lime is therefore about 35 per cent. by volume. The tests made by Macgregor show that in a 1:3 cement and sand mortar 50 per cent. of the cement may be replaced by lime without decreasing the strength of 8-ft. piers. It is believed, however, that the strengths developed in these tests is higher than would be realized with the same mortar on piers of greater cross sectional dimensions. The greatest advantage in the replacing of a part of the cement with hydrated lime is in the easier working qualities of the cement-lime mortar. Since the cement-lime mortar is more plastic than the pure Portland cement mortar, the bricks may be laid with greater ease and a more nearly uniform bedding of the bricks obtained. That a pure hydrated lime mortar is inefficient in masonry where a high compressive strength is desired is shown conclusively in these tests. The piers of pure lime mortar although aged four months as compared with one month for the piers of other mortars, showed when broken an almost entire lack of carbonation of the mortar on the interior. It is seen also in Fig. 21 that the cement and cement-lime mortar piers will compress only about one-fourth to one-half as much for the same load as those of the pure lime mortar. A low degree of compressibility is, of course, desirable for masonry in foundations or other parts of a building subjected to compression stresses.

EFFECT OF BOND.

The opinion prevails that the tying in of the masonry with header courses helps to strengthen the pier against bulging action, thereby increasing the strength in proportion to the number of headers used. Results obtained in the present investigation, however, show that variations in the number of header courses used do not have a positive effect on the compressive strength of the pier.

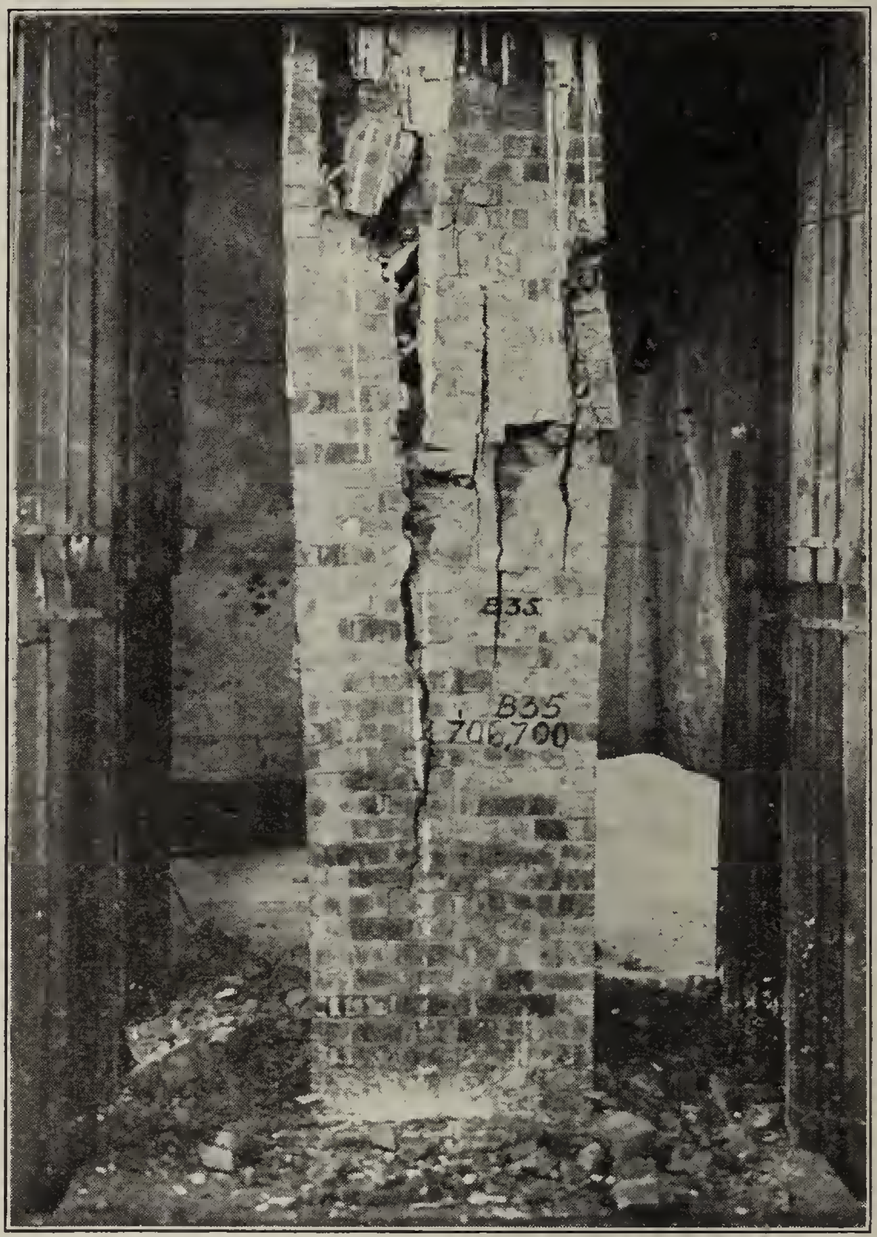


Fig. 13. Pier B 35, Serial No. 41. Grade 1 brick from Chicago District laid in cement-lime mortar.

The header course used in these tests, (a) Fig. 1, is believed to be the only practicable one which the size of the pier will permit. However, the earlier piers of the Pittsburgh district indicated a decrease in strength of the piers having the greatest number of header courses. It was thought that this effect was probably due to the presence of so many broken or quarter bricks in the corners of the header course. This led to a special study of bond, the results of which are given in table IX. In these tests pier 48 was built using header (c) Fig. 1. Although this header has fewer broken bricks, it necessitates a special arrangement of the adjacent stretcher courses in order to properly break joints. While the strength of this pier is 6 per cent. higher than that of pier 47 in which header (a) Fig. 1 was used, the result is not conclusive, since in two piers of exactly the same construction large variations in the strength may be expected. In view of the tendency of the individual bricks to fail by flexure, it is believed that the bricks of the header courses are broken through at the joints before the pier has reached that point of failure where these bricks would prevent bulging of the outer rings. For this reason very little increase in strength may be expected by the introduction of header courses. The results obtained on the piers reinforced with wire mesh are in close agreement with those made at Cornell University and indicate that while wire mesh in every horizontal joint increases the strength of the pier, the gain is slight when the mesh is used only in every third or fourth course.

SUMMARY.

The following conclusions are based upon the results of the present investigation and a study of previous tests referred to in the introduction, Chapter II.

1. The primary failure of brick piers is caused by a transverse failure of the individual bricks.

2. The ultimate strength of the pier may be increased by any method of construction which will increase the depth of the component parts of the pier. This may be done by (1) laying the bricks on edge instead of flat, (2) breaking joints every few courses instead of every course, or (3) using bricks of more than ordinary thickness.

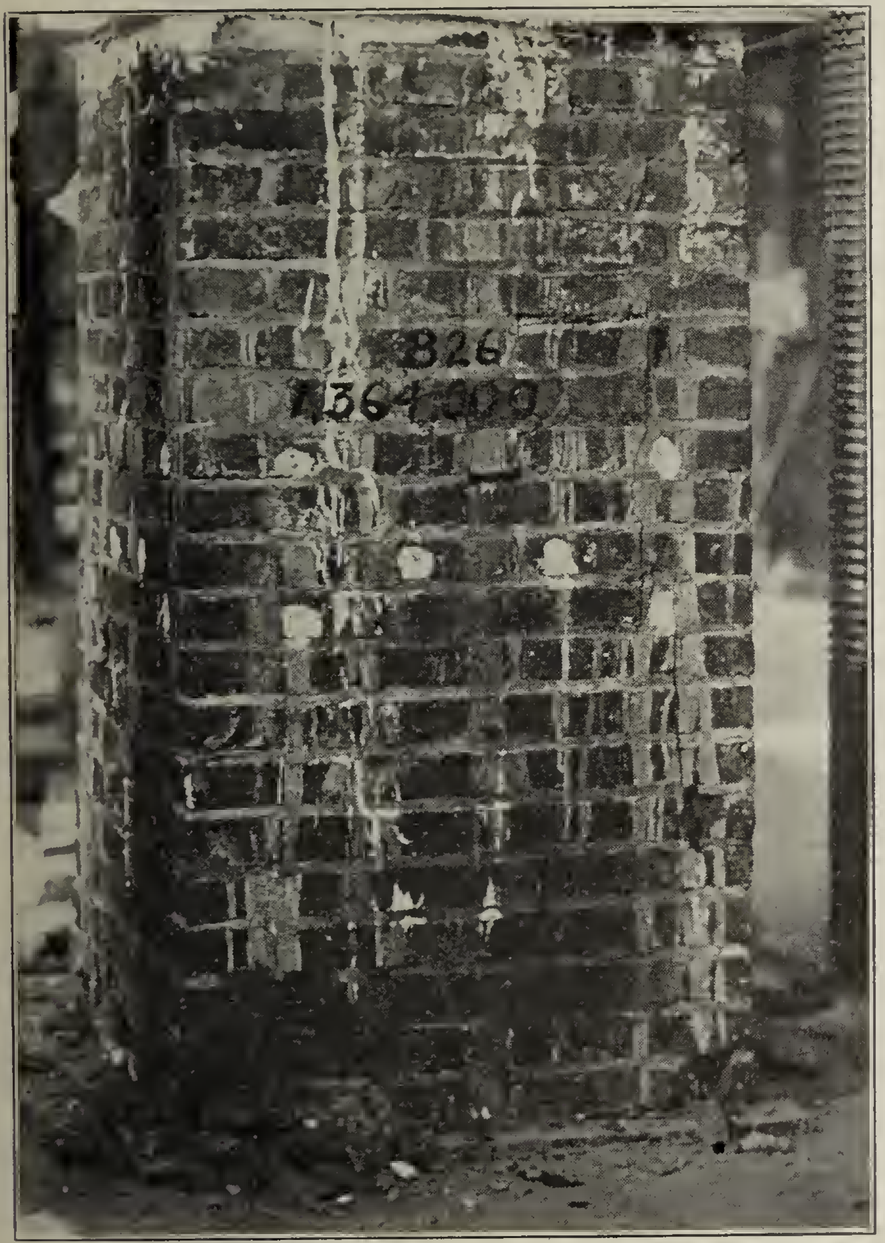


Fig. 14. Pier B 26, Serial No. 50. Grade 2 bricks from Pittsburgh District laid in cement-lime mortar. Reinforced in every fourth horizontal joint with wire mesh.

3. The strength of the pier may be increased by the introduction of wire mesh in all horizontal joints. The increase is slight, however, unless the mesh is used in every joint.

4. Varying the number of header courses used does not appreciably effect the ultimate strength of the pier.

5. The mortar joints should be made as thin as possible. They should be of uniform thickness. For this reason regularity in shape of the bricks is essential.

6. The ultimate strength of brick piers is proportional to the compressive and transverse strength of the bricks used in their construction.

7. The kind of mortar used is important in its effect on the strength of brick masonry. A pure lime mortar is inefficient when a high compressive strength is desired. In a mortar of 1 part portland cement to 3 parts sand, 25 per cent. by volume of the cement may be replaced by hydrated lime without appreciably affecting the strength of brick piers. Higher percentages of lime up to 50 per cent. by volume may be used on piers of small cross-sectional dimensions.

8. The following empirical formulas are derived from the tests of the present investigation:

(1) P equals Kp.
(2) P equals KR, where

P equals the ultimate unit compressive strength of the pier,
p equals the unit compressive strength of the single bricks,
R equals the unit transverse strength or modulus of rupture of the single bricks.
K is a constant depending upon the grade of mortar used, and for which the following values are given:

Mortar.	*Values to be determined by tests of individual bricks.*	*Value of K.*
1 (15% lime, 85% cement) to 3 parts sand by weight.	Unit compressive strength flat equals p.	.26
	Unit compressive strength on edge equals p.	.30
	Modulus of rupture from transverse test equals R.	1.25
1 part lime to 6 parts sand.	Unit compressive strength flat equals p.	.11
	Unit compressive strength on edge equals p.	.14
	Modulus of rupture from transverse test equals R.	.65
1 part cement to 3 parts sand.	Unit compressive strength flat equals p.	.27
	Unit of compressive strength on edge equals p.	.32
	Modulus of rupture from transverse test equals R.	1.45

Much valuable assistance has been rendered the author throughout the investigation; also in the preparation of this report, and it is desired especially to mention Prof. A. V. Bleinnger and J. H. Griffith, of the Bureau of Standards, and Prof. Edward Orton, Jr., chairman of the Technical Committee of the National Brick Manufacturers' Association.

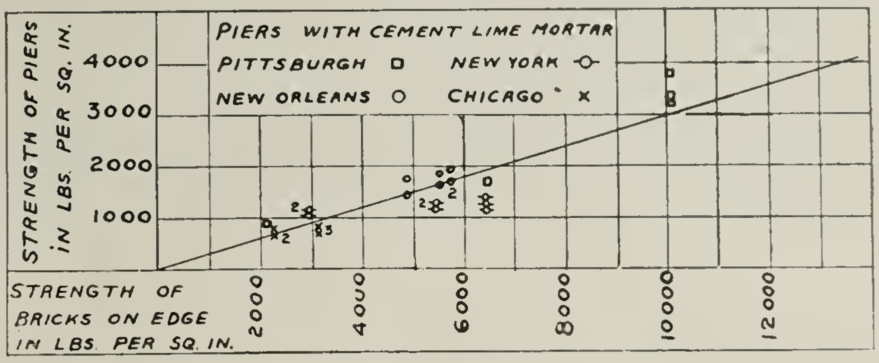


Fig. 20. Relation of compressive strength of single brick (on edge) to compressive strength of piers representing three grades of brick from four districts. All piers laid in cement-lime mortar.

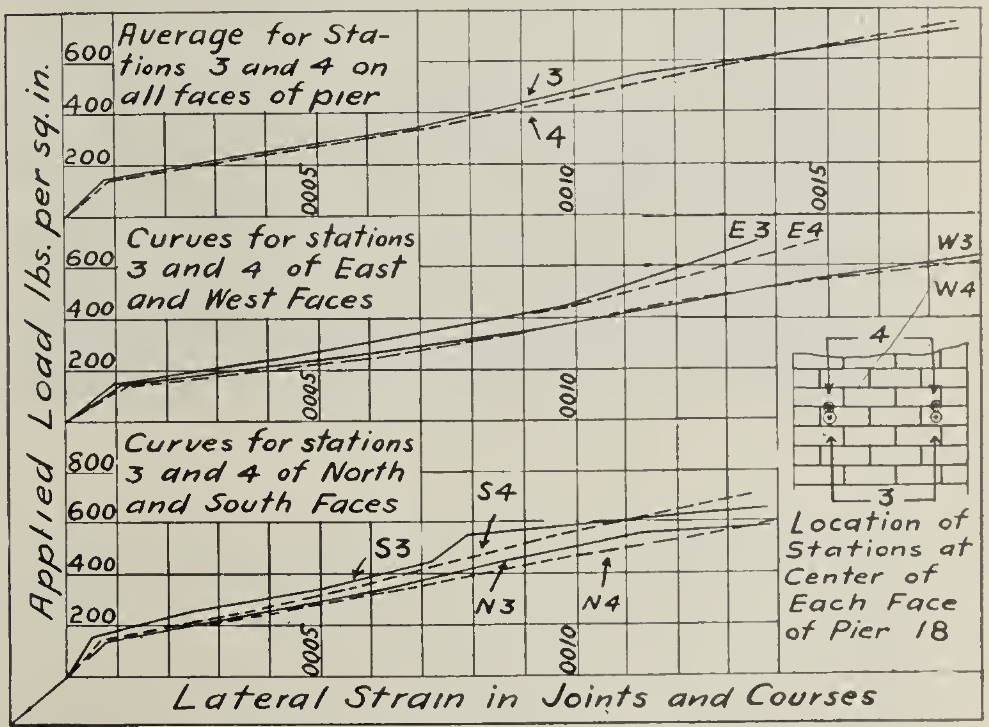


Fig. 24. Showing relative strain in horizontal joints and adjacent courses of pier of grade 1 brick laid in lime mortar.

President Clippert: It goes without saying we are very grateful to the Committee on Technical Investigation for this work which has been done in connection with the Bureau of Standards, and which has occupied their attention for several years. We are all to be congratulated on the splendid work that has been done that is of such great importance to the builders of the country. If there is no discussion of this paper we will take up the next.

Secretary Randall: I understand the slides for the next illustrated paper are ready. We will now take up No. 8 on the program,"A Yankee Common Building Brick Plant." Mr. Tuttle is here, but Mr. Horace D. Payne,. the manager of these plants will give the talk.

"A Yankee Common Building Brick Plant."

Horace D. Payne: When I came into the hall yesterday someone was talking about a Hoosier. We did not know then what a Hoosier was, we do now; but in Connecticut we know what a Yankee is.

Picture No. 1 is a general view of the plant. The father of the present owners of these plants started to make brick in New England in 1842. Made them by hand for a number of years. About thirty years ago it was equipped with pallet racks and about a year ago this time they put in a standard dryer. The equipment is the same on all the plants. We haul our clay from the clay bank.

Yard No. 1, Tuttle Brick Co., Middletown, Conn.

Clay Bank of Yard No. 2.

The next picture shows the clay bank for No. 2 yard. The clay itself runs anywhere from thirty to sixty feet, a red, plastic clay. Over there you can see the top of the steam shovel.

The third picture shows the incline pit, Yard No. 2. The incline serves for Yard 1 and Yard 2.

The fourth is another view of Yard 2.

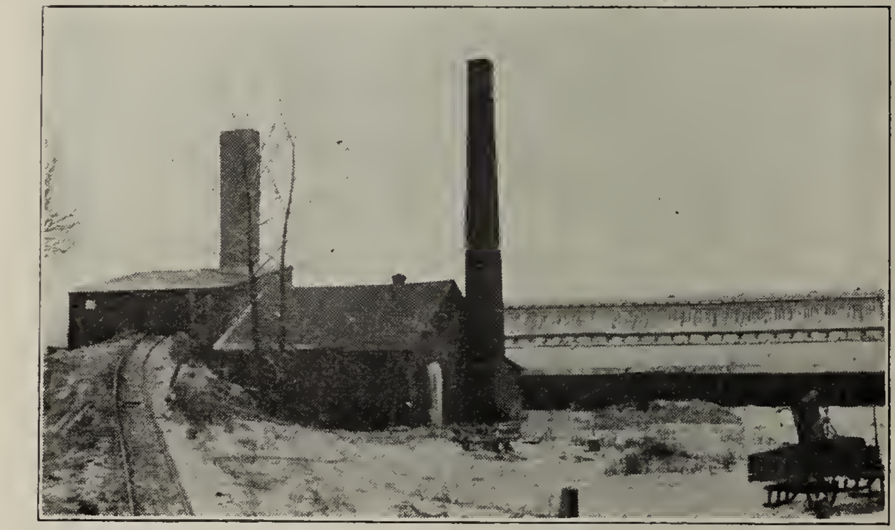
The fifth is another view of Yard 2.

The sixth is a view of the stable. As you will notice, it is built of wood, but we have had it for a number of years, and we will have to apologize for the frame construction.

The seventh is yard No. 3. We haul our clay direct from the steam shovel.

Yard No. 2, Showing Stack of Standard Dryer.

Yard No. 2, Showing the Incline Pit.


Yard No. 2.

Frame Stable, for Which Mr. Payne Apologized.

View of Yard No. 3.

The eighth is our clay shed, built before Yard 2. We have had a lot of trouble making hollow tile because the clay was wet. We have not made any tile for a year owing to the shortage of labor.

The ninth shows yard No. 3, showing the racks and pallets.

The tenth is a view of the brick storage sheds at yard No. 3. No. 3.

The eleventh is a view of the down-draft kiln, which we built for burning hollow tile. All our common brick are burned with wood. We have not been able to get the color on our brick by burning with coal that we have with wood.

The twelfth is the office of the Tuttle Brick Company. The large man there is the president of the company, and to him is due the success of the company. Any brick man that comes to Connecticut will find a hearty welcome at the plant of the Tuttle Brick Company. (Applause.)

Charles H. Bryan: I just came in to tell you that Secretary Redfield has arrived. Mr. Durbin and I met him, and after I had told him Detroit was the best town on earth and Indianapolis was the next and he agreed with me and that the brickmakers are all right, I told him about our telegram to the President and he approved. I think he is all right and I know the rest of you will when you meet him.

Clay Shed at Yard No. 3.

Brick Storage Sheds and Auto Garage.

West View Yard No. 3, Showing Racks and Pallets.

Shovel Yard No. 3.

Brick Storage Shed and Wilson Down-Draft Kiln.

Secretary Randall: We will have to make a little shift in the program, for the reason that some of the lantern slides with which some of the talks are to be illustrated are not quite ready. Mr. Salmen is ready with his slides and we will have his talk now on "Brickmaking in Louisiana."

"Brickmaking in Louisiana."

Fritz Salmen, Slidell, La.

Mr. President and Gentlemen of the Convention:

I am sorry I have not more and better pictures, but I will show you what we have. We had difficulty in getting a photographer to take the pictures, and when we did get him out there the plant was closed down and the pits flooded with water. Most of you have been down to our plant and know about what it is.

(Mr. Salmen showed a number of lantern slides made from photographs of his plant. The pictures were not received in time to permit of reproduction in these columns, but will be given in a subsequent issue, and in the report of the proceedings to be issued later on in book form.—Editor.)

This first pictures shows the pit shovel. We have two, in order to get the proper mixture of clay.

This is our clay bed. As you know, our clay bed is below the level of the ocean, and we have a great deal of seepage, and have to have it artificially drained. Inasmuch as we are closed down now, and were when the picture was taken the bed was not drained.

Next is the molding shed and dryers.

Next is a view of our continuous kiln. It is a sixteen-chamber, Haigh continuous kiln.

This is a back view of one of our common up-draft kilns, a Morrison.

Next is a view of our incline. We must get our clay about a mile from the plant and the clay is drawn up this incline.

Next is a view of the plant where we are reconstructing our transfer tracks. We have been doing our transfer by labor, but labor has been very scarce. You folks up north took a big crowd of our darkies last spring, and the United States Army took a lot more, and we hardly know how we are going to start up this spring. This transfer truck we hope will do away with quite a number of the men required to run the plant.

Next, is the way we have been transferring. These are the pallets on which we load our burned brick and take them to the docks, where they are picked up by cranes and transferred to the barges or scows.

Next is the machine room. As I say, we were shut down, but I had this taken to give you an opportunity of seeing how we are fixed molding brick, so we had them load the cart with dry brick. We use a Chambers machine with a Fate cutter, which seems best adapted to our clay. They run the cars through the steam dryer. Following a suggestion made by Mr. Richardson in one of his papers, we put in a series of tunnel dryers, taking the waste heat from the kiln to dry our brick. We put up a tunnel dryer and we have found it works very well. It is best adapted to our clay.

The next picture shows you our water protection. With this apparatus we can throw a six-inch stream over any of the buildings desired.

Next is how we transfer our burned brick. They come out of the kilns and go to the scows or barges. We move them in units of a thousand, and in the city of New Orleans we have another traveling crane, which picks up these brick off the scows and drops them on the land or the trucks which carry them to the building site. That is, we only handle them once, and that is when we load them on to these pallets, and the next on the building site.

Next shows the brickmaking machinery.

Next is another view of our up-draft kilns, which we hope some time to replace with a continuous kiln.

Next is one of our small trains of clay cars being drawn from the pit up the incline.

Here is this picture, we have in one end of our molding shed a machine to make brick, and in the other end we make hollow tile, and this shows the end with the hollow tile outfit.

Next, shows the return trip of the empty cars to the clay pit. The little tunnel you see is the dryer tunnel we built, before we had the waste-heat system. We are now beginning to put in other dryers and in time hope to have the entire system the waste-heat system before we get through with it.

This is all we have. I am sorry I could not show you more of the plant, but this was the best we could do. (Applause.)

General Discussion.

Mr. Eisenhart: I want to ask Mr. Salmen a few questions. I see he is on the way to solve the problem I worked over years ago, and honest confession, I believe, is good for the soul. I know quite a number of years ago I had a set-to with some of our older brickmakers. If I remember correctly, one was Mr. Lovejoy, and I am not sure but that Mr. Richardson got into it, and now I want to make a statement after all these years, that they were right and I was wrong. I mention this to do justice to these men, and to warn someone else who is working under the same idea. I want to ask Mr. Salmen what part of the waste heat he uses.

Mr. Salmen: I use the heat from the burned brick.

Mr. Eisenhart: That is what I was doing and doing it successfully, and I thought the older fellows did not know, but I found they did know. I did dry my brick, but at an expense. Any man who drys his brick with waste heat and thinks he is drying his brick for nothing is fooled. I now dry with waste heat by taking all the gases out and I dry successfully 42,000 soft mud brick every day, but it costs me something to do it. It costs me something to run the fans and the destruction of my cars and pallets by the gases in the dryer kiln, so the waste heat is not all pure profit, but it is profitable for me to do it the way my plant is arranged. But the idea that drying brick with the waste heat from the burning part of the kiln is all profit is wrong. You may make more money by letting that heat go to burn your brick.

Mr. Richardson: I agree with the German engineers in that respect that as far as the heat from the cooling kilns is concerned, there is nothing that can be utilized as waste heat in the dryer at a distance. But if the cooling chambers are

A General View of the Plant of the Tuttle Brick Co., Middletown, Conn.

back close enough to dry the brick as the Germans do, it is all right. If the heat is low temperature as it is when you pull it off with fans at a distance, there is nothing to it. Even if you take the heat from the burning chambers, you must take it into your stack at sufficient temperature to produce draft, but probably you will get it so surcharged with sulphur that it is hard on your pallets.

Mr. Salmen: I thought in the burned part of the kiln, the gases had been consumed and the hot air would be about as pure as it could be. That is one thing I am not clear on, though. Whether that heat is charged with any injurious gases that would effect the cars and outfit you use for drying. I was under the impression that these gases were not injurious. I knew the gases from the burning part of the kiln were injurious to metal, for they have already eaten up one of our fans and we have had to replace it, and we have had to replace one of the housings with reinforced concrete. I thought we would have another advantage. Down in our country it is much warmer than up north, it is warm a good many months of the year, and it is too hot in the cooling kilns to put the men to work and if we can get some of the hot air out of them without injuring the brick and cooling off too suddenly, it will serve a double purpose, that of drying the brick and enabling the men to work with more comfort.

H. C. Kleymeyer, Evansville, Ind.: The virtue of the pudding is in the eating. We have two Haigh continuous kilns that we are using the waste heat for drying our brick. The first kiln the product is dry press brick, and we didn't need waste heat, and since we have changed to stiff mud, we need the heat. We are drawing the heat back. If you get up too close, of course, you are going to take the heat from your burning brick, but if you stay far enough back, you are all right, and I do not see how anybody can use more fuel in using an independent dryer than by using this heat, and as Mr. Salmen says you cool your kilns. We now have a big advantage; we bumped into coal under our clay mine and it makes it very profitable.

Yard Office of Tuttle Brick Company.

Mr. Stafford: I would like to ask Mr. Salmen why he builds reinforced concrete housing for his fan? If he hasn't any brick to spare, he ought to send to some of his brickmaking friends for same. (Laughter.)

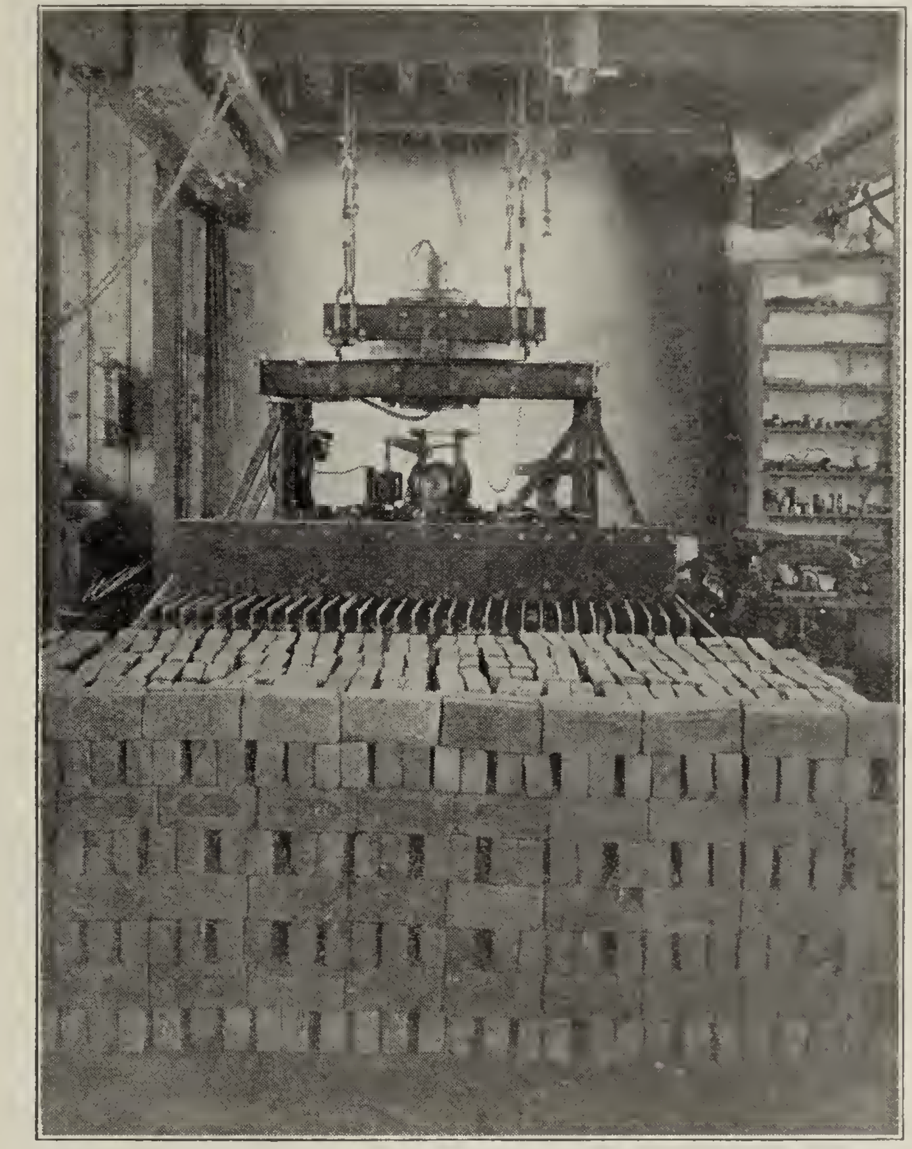
Mr. Salmen: Friend Stafford is all right, but you all know how the housing of a fan is built, and you can hardly build it with brick.

Mr. Stafford: We have two built with brick.

Mr. Eisenhart: Mr. Salmen did not understand, and I want to set him straight. I did not mean in taking the waste heat out of the burned kiln would give you any gases. I said the expense of taking the waste heat out of the burning brick amounted to something for the simple fact that it interferes with our draft when we get close enough to get much heat, so in taking the gases out to get enough heat to dry 42,000 brick per day, the gases do eat up our cars and it's expensive, yet it is a money making proposition.

Mr. Richardson: May I say a word? I want to make myself right, and I am afraid I may be misunderstood. I did not mean to say it was not practical to use the waste heat from the continuous kiln for drying, even though it is expensive for fuel. You see you have some heat back there that you have to get out, even if you have to take a fan to draw it out of the way. I have also taken that heat out of the dryer, and when you come to figure that down to heat units it is going to take a little more coal to burn your brick from the fact you are not burning all the air you have. If you want rapid drying you want to pull the heat in at about 300 degrees.

Mr. Eisenhart: I beg your pardon for speaking again, but in regard to working in the heat. That is one of the serious problems in the continuous kiln. We have the same kind of a kiln as Mr. Kleymeyer, a Haigh kiln, and we have a big pipe about sixteen inches in diameter in every chamber, which we connect with a six-inch pipe, and we have a small fan that requires a five-horsepower motor, and when the men begin to take out the brick they pump cold air into the chamber.


This photograph shows the brick set on the kiln bottom as they are set in the starting of a scoved or clamp kiln, with a front view of the Setting Machine raised to a height sufficient to show the finger construction. It also shows a general view of the machine suspended from the crane.

President Clippert: This discussion has been very interesting. If there is nothing further along this line, we will pass to the next.

Secretary Randall: I would suggest we take up another illustrated paper. Mr. W. W. Dickinson of Little Rock, Ark., is with us and has some illustrations of a labor-saving device that I think the convention would find interesting.

A New Brick Setting Device.

W. W. Dickinson: I only have a few slides, but I am very glad to show them for the benefit of the convention.

The first picture shows the brick set on the kiln bottom as they are set in the starting of a clamp kiln. I am speaking strictly of a stiff-mud proposition, set three over one or five over two. The machine is so constructed that if you set the brick open for drying, the machine automatically closes the brick up themselves. You do not need a specially constructed dryer car. Any transfer car will do.

Next is a picture of the machine after having set the brick. This was taken at the plant of the Barkwill-Farr plant in Cleveland, where they are going to use these machines.

The third view is a picture of the machine taking the brick off the dryer cars. If you will use an up-draft kiln and set in the kiln with this machine, you can save 25 percent. of the labor or cost of setting.

I have some leaflets giving further particulars and details, which I will be glad to give to any of the members who are interested and who desire further information.

President Clippert: I am sure we have all been interested in these slides. Believe the next on the program is a paper by Charles F. Hermann, on "Burning Brick with Producer Gas in Indiana," which will be illustrated.

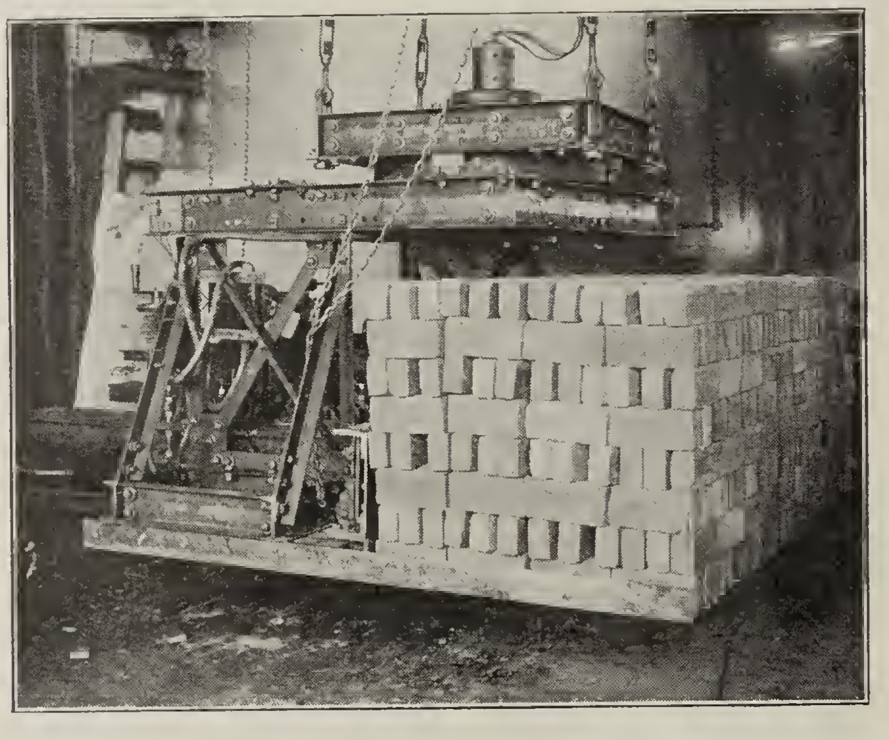
Charles F. Hermann: I am sorry gentlemen, I have only a few slides to show you of our plant at Tell City, Ind., but you can see additional slides being shown in the rooms of the Manufacturers' Equipment Company.

BURNING BRICK WITH PRODUCER GAS IN INDIANA.

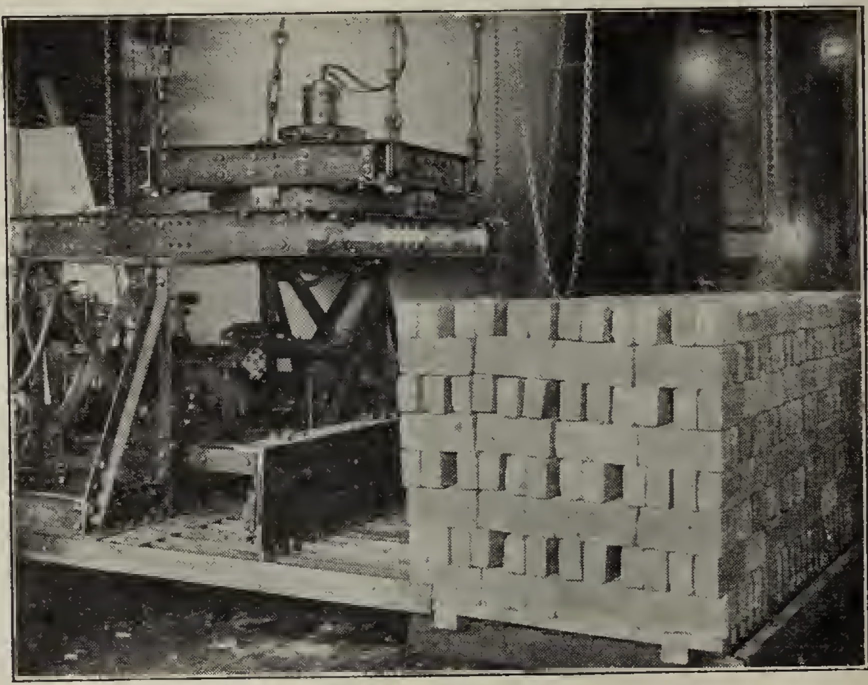
CHAS. F. HERMANN, TELL CITY, IND.

Gentlemen of the Convention:

When our worthy Secretary apprised me of the fact that I was slated for the presentation of a paper, "Burning Brick With Producer Gas in Indiana," the subject was one that was very close to my heart; still I felt timid in approaching it, lest I fail to do it full justice, inasmuch as my experience during the past four years has been so satisfactory in the use of producer gas in the burning of our periodic kilns, both from a financial and economic standpoint.



This photograph shows the brick raised from the dryer car by the Setting Machine and the car removed. This unit is now ready to be moved into position in the kiln. The uniform position of the lower course in the fingers is clearly shown at the right of the photograph.



This photograph shows a side view of the Setting Machine and a unit of brick hacked on a dryer car ready to be set in the kiln. The Machine will be raised slightly and the push-out drawn back; then the Machine will be moved forward inserting the fingers under the brick.

The plant of the U. S. Brick Company is located at Tell City, Ind., fifty-two miles east of Evansville, and boasting very limited railway facilities. The clay is a fair quality, surface clay, workable to a depth of from ten to twelve feet and possessing no distinctive merits other than it required a rather large quantity of coal to successfully burn it. Up to the fall of 1914 we manufactured common wire-cut building brick and drain tile. Owing to poor shipping facilities, a limited home market, and keen competition from nearby and better favored points, we were unable to make and dispose of any great volume of either of our products.

Owing to certain peculiarities of our clay, in spite of the large quantity of coal consumed in the burning of our brick, we were compelled to stock up a large quantity of salmon brick. Our salmon pile on the yard was assuming alarming and discouraging proportions, and naturally we felt it incumbent upon ourselves to seek ways and means to rectify or rather relieve the menace confronting us.

After investigating the use of producer gas in burning lime, and noting the economical results obtained, we found that when burning with coal they burned one pound of lime with two pounds of coal as against burning four pounds of lime with one pound of coal in the use of producer gas. These results were observed at the plant of the Moores Lime Company at Moores Station, and the facts were given by Mr. Higgins, superintendent of the plant. This convinced us that very beneficial results could be obtained in the burning of brick and tile, and we accordingly contracted with the Manufacturers Equipment Company for the Underwood patented producer gas burning system, and installed the same in the early spring of 1914.

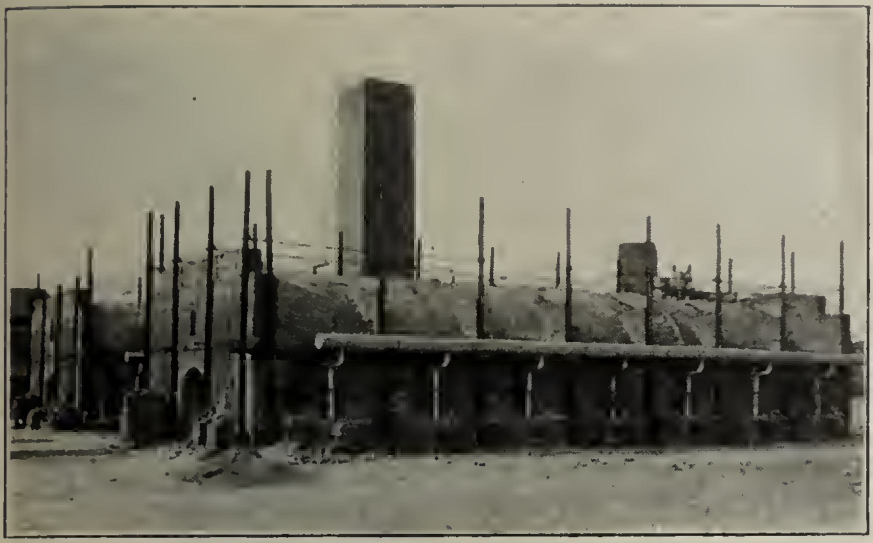
The marked results we are obtaining have been a surprise to all clayworkers who visited our plant, of whom there have been many, both as to uniformity in burns from top to bottom, as well as in the quality of the ware. We make the claim of producing the richest colors.

According to the test made by the United States Bureau of Standards it developed that we are consuming thirty-five tons of coal for burning a specific quantity of ware and our records show that by previously firing with coal direct we consumed fifty-five tons of coal for burning the same quantity of ware. This indicates an unqualified saving of twenty tons or thirty-six and four-elevenths per cent. This test was made when burning a single kiln and by burning more than one kiln at a time, as we are regularly doing, the saving is much greater. The test by the Bureau of Standards further showed that the kiln was burned in ninety-five and one-fourth hours or about four days. Our regular burning time when using coal direct fired was from seven to eight days, depending on weather conditions. Variable weather, such as heavy atmosphere, rain, wind, etc., do not have any effect on burning with this system as the burning is done entirely within kilns having closed furnaces.

The points of merit in the use of producer gas in burning clay products are numerous and varied. These points summarized are:

1. Saving in fuel.
2. Saving in burning time.
3. Increased per cent No. 1 ware.
4. Saving on labor.
5. Control of temperatures.
6. Instantaneous control of oxidizing or reducing conditions.
7. Distribution of heat throughout kiln.
8. Enhanced life of kilns.
9. Elimination of kiln repairs—furnaces and fire bays.
10. Elimination of smoke.
11. Cleaner appearance of yard.
12. Elimination of coal and ash piles about kilns.
13. Material increase in kiln capacity.
14. Space around kilns available for stock, where formerly occupied by coal piles and passages for horse and cart.

Prior to installing the producer gas system we carted the coal from cars and distributed it around the kilns at a cost of approximately 15 cents per ton, whereas by concentrating the coal at one



Gas Fired Kilns at Tell City Plant.

point at the producer and installing a coal elevator we handle it at a cost of about 1 cent per ton.

Gentlemen, assuring you that each and every one is cordially invited to visit Tell City and the U. S. Brick Company, I heartily thank you for your attention. (Applause.)

President Clippert: This brings us to the next number on the program, "Art in Brick and Landscape Work," by Mr. B. Mifflin Hood, of Atlanta, Ga. Believe this number is to be illustrated.

General View of the Plant of the U. S. Brick Company, Tell City, Ind.

Art in Brick and Landscape Work.

B. Mifflin Hood, Atlanta, Ga.

Mr. Chairman and Gentlemen of the Convention:

Mr. Randall chose this subject to relieve you from the extreme seriousness of the fuel shortage and scarcity of labor by bringing in a topic of less serious and light vein. In discussing this question of landscape in these times of stress and strain incident to the war, it is not wise to request fuel for the purpose of landscape work, if to the detriment of material necessary to win the war.

For the time being we have discontinued the manufacture of landscape tile and are bending our best efforts toward the manufacture of over two thousand carloads of our patented spiral chemical rings, acid-proof tiles and brick going into the construction of chemical plants for the manufacture of high explosives.

Experts advise us that our spiral rings are more scientific and efficient than any product produced in Germany previous to the opening of the war.

When the war has been brought to a successful conclusion and American armies are victorious, we expect to be better situated to serve the architects with landscape brick and tile. During this time of depression in residence construction, the spare moments of the progressive clayworker can be well spent in showing architects and landscape artists the possibilities of burnt clay products in the treatment of landscape. It is unnecessary to knock cement construction, but the beauty, merits and virtue of the variety of colors of burnt clay products should be emphasized.

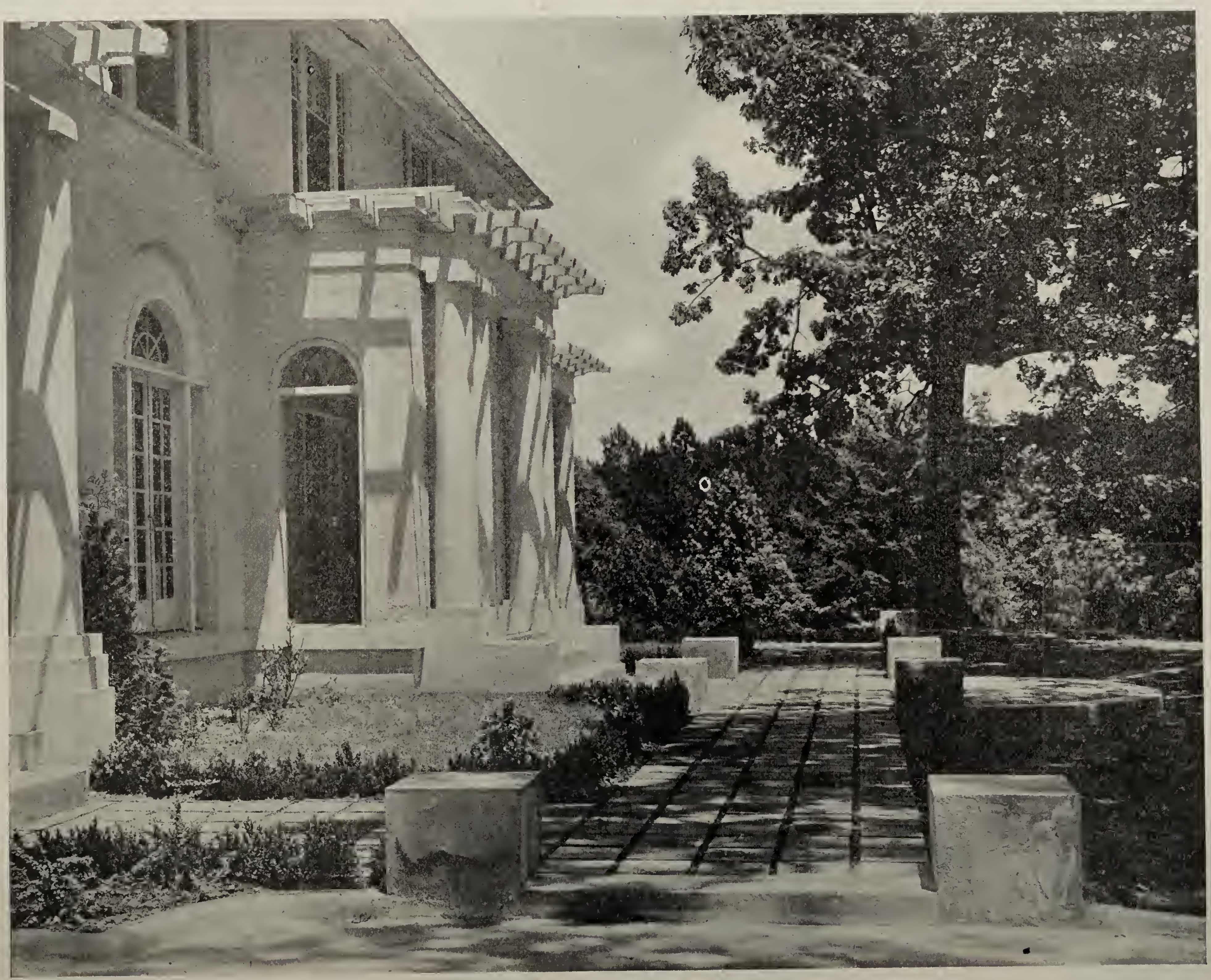
The modern conception of landscape in art was unknown to the ancient Greek, as all of the emphasis was laid on the figure. In Byzantine art there was no background, as it was filled in with solid gold. In the early Roman days the real appreciation for landscape began to assert itself, which was expressed in the villas, parks, promenades and gardens and is today typified in the Vatican gardens. The Moors in Spain also appreciated landscape effects as exemplified in the gardens of the Alcazar and the Alhambra. In France, Louis XIV carried out an elaborate landscape effect in the grounds facing the palace at Versailles.

All of the foregoing suggestions belong to the form or geometrical type of landscape, and it is not until you cross to the British Isles that you come to the wilder and more natural type, in which curved walks and roads predominate rather than those laid out on straight lines, examples of which are to be found in the country estates of nobility.

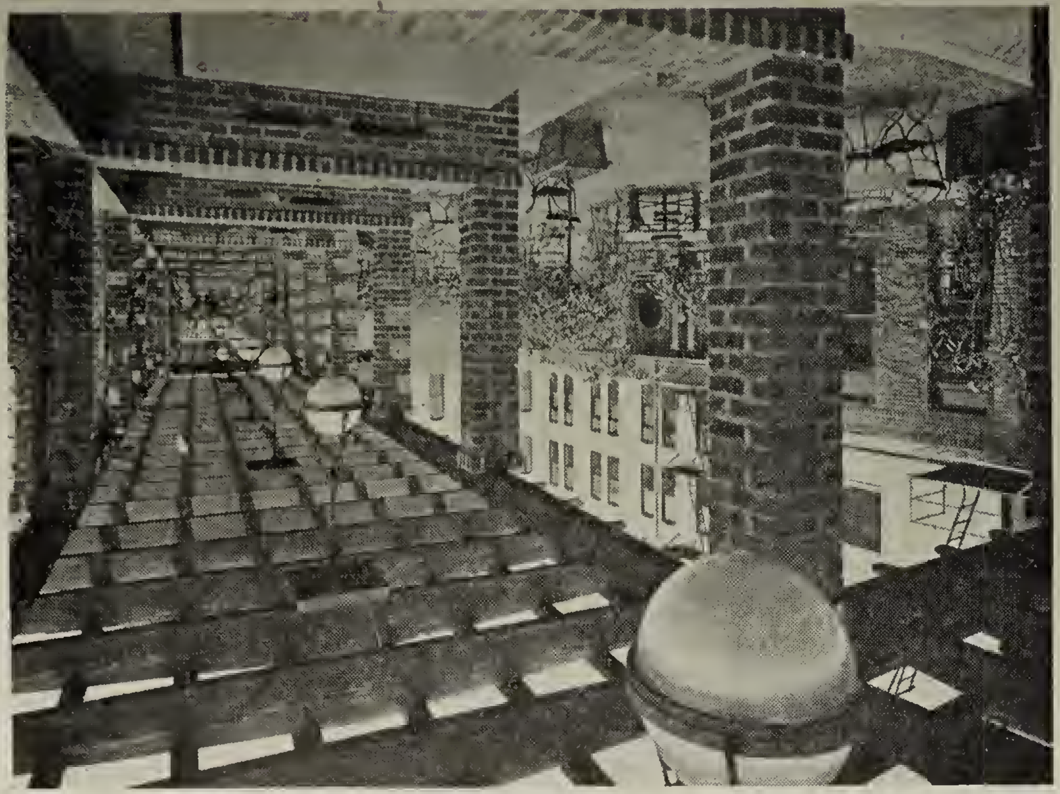
In America there is an ever growing appreciation of landscape effects. It is in the South that the climatic conditions are so perfect, calling our people into the open and now that the Southern people are beginning to enjoy an economic surplus, we expect wonderful development in landscape treatment. The open terrace on a balmy moonlight night is in keeping with the old Southern Colonial Architecture, walks of brick laid in herringbone among the box wood, driveways of

KILNS USING UNDERWOOD PRODUCER
GAS SYSTEM, U.S. BRICK CO. TELL CITY, IND.

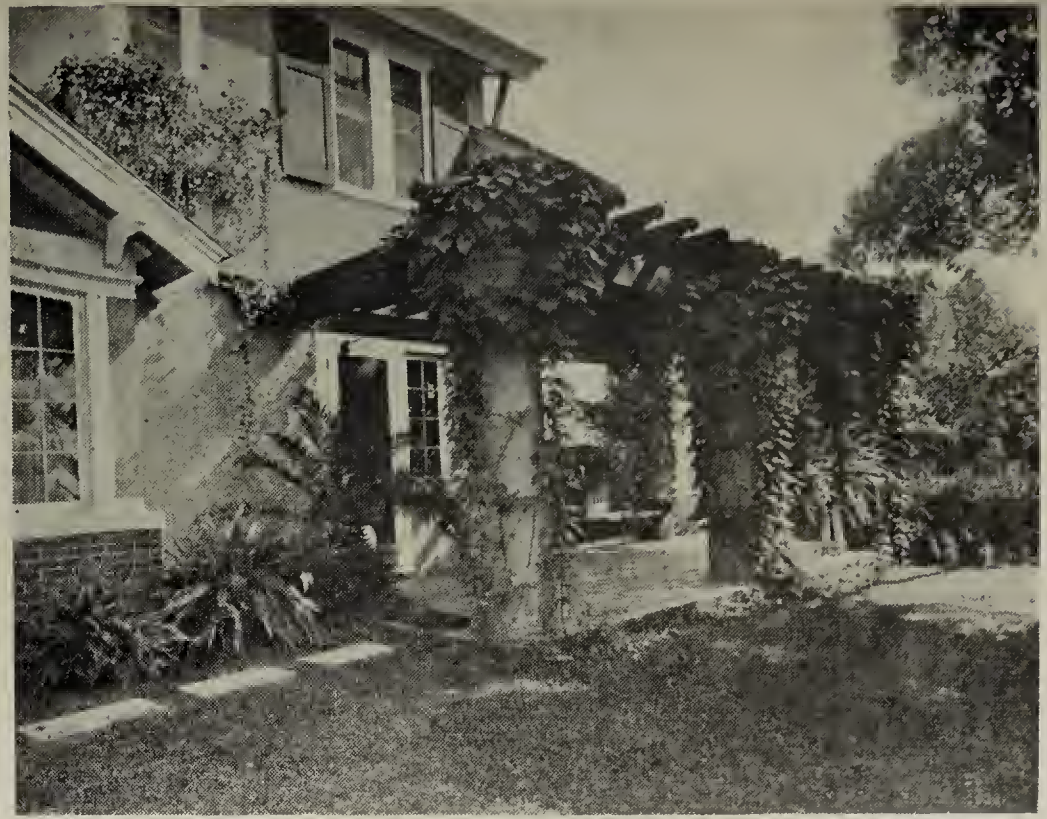
A Group of Down Draft Kilns at Tell City.



Morrison Residence, Atlanta, Ga. Terrace and Walks of Hood's "Pottry" Tile.

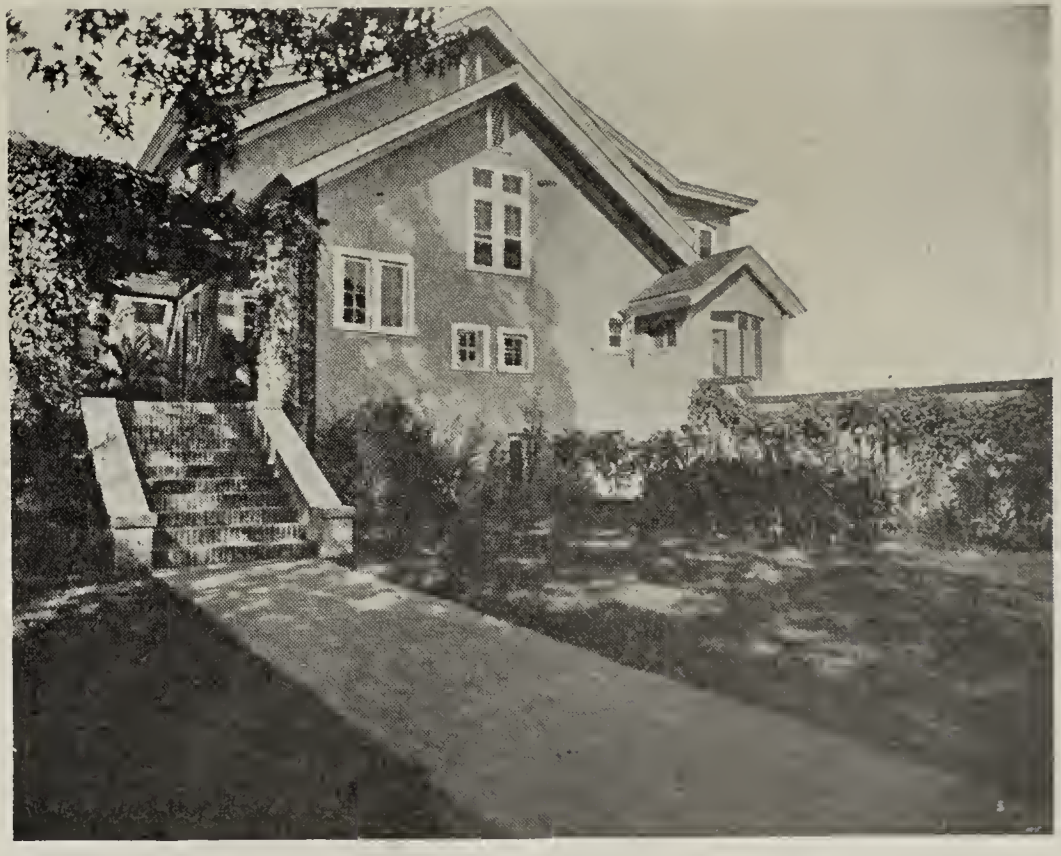


Outdoor Rathskellar, Brazos Hotel, Houston, Tex.



Fine Combination of Brick, Tile and Foliage.

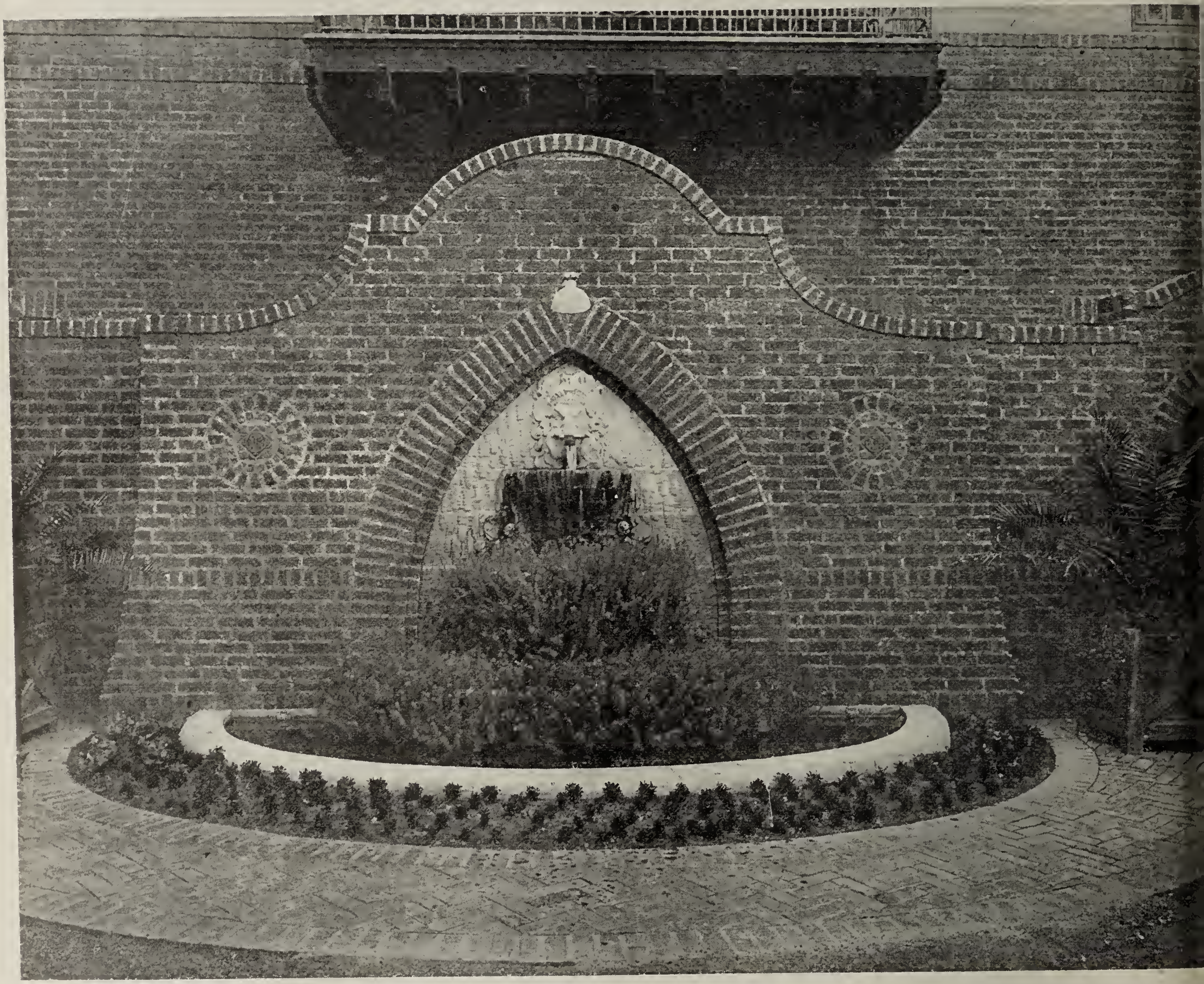
Terrace of Missionary Ridge Residence.



Tile Paved Walk Side Entrance to Missionary Ridge Residence.

vitrified brick, garden and terrace walls of texture brick placing in harmony with the Autumn foliage is the Southern ideal.

At Grove Park Inn, Asheville, N. C., we have an example of a broad terrace which required ten carloads of burnt clay products to cover the broad plaza, formerly laid with concrete. This expanse of cold gray color of cement seemed to be the only object out of harmony with the landscape and ideal setting of this famous home like resort and we were able to convince the management that if this were laid in rubble-random with the broken fragments of our "Pottry" Tile, ranging in colors from reds to flashed browns, bronzes and bluish purples that an effect would be carried out in harmony with nature and produce results far superior to the monotony of cement. The result of this experiment was so pleasing that all the walks, rambling among the hills about Grove Park Inn are being laid with this same material.



An Unusual Decorative Feature in Brick Work, Brazos Hotel. Houston, Texas

In Atlanta we were able to persuade a florist to abandon the purely sanitary idea of white encaustic tile for floors and walls and create the effect of a natural garden of brick walls possessing a wealth of color, harmonizing the growing flowers, with the satisfactory results that this store is considered the most attractive retail flower store in America.

In Texas we met a most progressive architect who wished to produce a Rathskellar treatment in the rear court of a hotel and have it in the open air. From these views of artistic brick work about the fountain, the walks, tile seats and general treatment you can readily appreciate the possibilities of burnt clay products.

Here is a picture of an architect's home, a frame structure, yet he appreciates the merits of burnt clay products and used our 8x8x2 "Pottry" tile on all of the drive ways, garage floors, back yard, walks, terrace floors, chimneys and fireplaces.

Here is a treatment of a Club House an attractive frame structure, yet there are eight carloads of vitrified tile used on the terraces, making it look like a massive Oriental rug.

Here are views of an attractive residence with a stucco exterior. We called on this architect in the interest of face brick exterior but lost out, we then engaged the attention of the architect in the possibilities of burnt clay products for the landscape treatment and here are views showing the brick terrace walls, the tile walks, brick steps, tile stepping stones, tile terraces, sun parlor with tile floor and combination of brick and tile fireplaces. When we finished the architect said in merriment that we had furnished sufficient brick and tile to have veneered the whole structure and that he much preferred the effect of its use crowning Missionary Ridge in its landscape effects than had he used it in the elevation.

We observed that the railroads of the South were showing a disposition to improve the appearance of the railroad stations and we made it our duty to call upon the chief engineer of all the railroads in the Southern States and present to them the opportunity of landscape effects in the walks, platforms and grounds about the various stations, with the result that we are furnishing on numerous stations our "Pottry" tiles in the landscape treatments and our Quarrie Tiles instead of cement for the station floors and here is one view in which fourteen carloads of floor tile were used on one station.

It is in Florida, where the lakes abound with moss hanging trees and palmettos and evergreen aid to the landscape that there has been real and genuine appreciation of brick and tile in landscape treatments. We are pleased to show you these views which illustrate such pleasing effects.

It is necessary to bear in mind that texture and color must both be considered in all brick and tile work adapted to landscape treatments.

Here are views of various landscape treatments throughout the South, which we have published and distributed to every Southern architect and if there are any of you interested in these I shall be pleased to show them to you after adjournment of this session.

Again I apologize to you for my inability to do this speech justice, due to my intensive application on Government work and wish to thank you for your close attention. (Applause).

Secretary Randall: I for one am sorry for the fellows down stairs who did not get to hear this talk. I think a vote of thanks is due Mr. Hood for the splendid presentation of this paper.

A. R. D. Johnson, Raliegh, N. C.

Mr. Sibley: I move we give Mr. Hood a vote of thanks.

Vice-President Robb (in the chair): I think we can take vote on this without a second. I would ask for a rising vote. Carried.

Approves the Idea of Keeping the N. B. M. A. an Educational Organization.

A. R. D. Johnson: I would like to make a motion, though it is not exactly in line with the discussion of this paper. I believe it would be good policy for this association. Adhering to this plan of making it a purely educational association, I want to say in that connection I approve of that idea and I think it ought to be kept on that plan. But with a view of making the association of more benefit to its members, I want to make a motion that there be appointed three permanent committees in addition to the Committee on Technical Investigation, who will work along the line similar exhibit in dfferent places. First a committee, I would suggest a name for want of a better one of Efficient Engineering, the duties of that committee to be to travel around in different parts of the country and get together ideas that would tend to put more efficiency into the manufacture of clay products. I think that it is known that the matter of transportation of the raw material, the grinding proposition has been worked out, but the machinery or mechanical part of wheeling or putting the brick in the kiln, the shipping of the brick, etc., there has been a great waste. There is a great waste as Mr. Richardson has said. I agree with him there should be a conservation of fuel and also of conservation of labor as well as fuel. I am confident, if we had a committee composed of men who would bear their own traveling expenses and travel over different territory and into different districts, and study the methods employed, and get together a day or two before the annual convention and formulate a report and suggest new ideas that they might think fit to put into practice, it would mean more economical means of producing clay products.

Another committee called a Research Committee to make suggestions on how to use all the clay products made. For instance, Mr. Hood has found where burned clay products have been used where other products might be used, and clay products have come in and really proved better, and given somebody in the clay industry an outlet. Have a committee that will report any suggestions they may have that will broaden the field for clay products.

One other committee that would furnish a basis for advertising matter, in the way of showing the superiority of clay products. Not to write advertisements, but to give information in concrete form that would give the basis of effective advertising.

Now, I would like to move the appointment of three committees whose duties would be to report all matters that would be of interest to the members here. One man might go to the Chicago district and another to the Hudson River district, and another to the Southern territory, and visit representative plants and report in concrete form methods and processes they had absorbed and it would be of benefit. This might go to the Committee on Resolutions and be reported tomorrow.

Chairman Robb: This matter will be referred to the Committee on Resolutions. I suggest that Mr. Johnson put his ideas before the Committee on Resolutions which will meet at headquarters this afternoon at four o'clock. What is the next Mr. Secretary?

John T. Hummert, Quincy, Ill.: At former conventions we have heard about this Winona Technical Institute, and a number of us would like to go out there. I understand they are not running the bricklaying department, but if Mr. Randall can tell us how to get there, I think some of the members would like to go.

Secretary Randall: You understand, I am sure, that it is no longer the Winona Technical Institute, but is the Technical High School, where trades are being taught. You can get there by taking the East Michigan Street car or the East Tenth Street car.

Chairman Robb: This completes the morning session, as I understand it, and we will stand adjourned until tomorrow morning.

THIRD SESSION.

Friday, February 15, 10:00 A. M., 1918.

Persident Clippert: The convention will please come to order. We are a little late getting started this morning so we must get down to business. What is the first order of business Mr. Secretary.

Secretary Randall: The first number is a paper on "Kiln Floors" by Robert Twells, of Alton Park, Tenn. Mr. Twells is an old time member of the Association and is a brickmaker of many years' experience and speaks from the standpoint of a practical burner. He is not present but has sent his paper, with the following letter of regret:

Dear Mr. Secretary:

Enclosed find paper on Kiln Floor. In traveling life's pathway a few shadows and troubles have crossed my path. They may have stayed for a night, but in the morning, like the Arab, they have folded their tent and gently stolen away. Then, there have been long stretches of smooth, pleasant traveling, and then there have been a few specially bright spots on which my mind loves to linger, and amongst them have been the time which I have spent at the different N. B. A. Conventions. For good reasons I do not expect to be present this year, but I shall be thinking about you, and I trust that you will have a very profitable and pleasant time.

Yours truly, ROBERT TWELLS.

Alton Park, Tenn., February 6, 1918.

THE KILN FLOOR.

ROBERT TWELLS, ALTON PARK, ILL.

Mr. Chairman and Gentlemen of the Convention:

Among the many important things that demand the attention of the clayworker, few are more important than the kiln floors, because on them depends whether he will make a good and quick burn.

Before we get through discussing this subject, I doubt not that there will be many men with many minds.

But I venture to say there are four points that the ideal kiln floor must possess on which we can all agree:

1. It must be substantial.
2. It must be arranged so that it can be cleaned without disturbing the surface.
3. It must be arranged so that it will have an even draft in every part.
4. It must have a level surface.

In the first place it must be substantial. When we think of the tremendous weight of the clay ware resting on the kiln floor, ranging anywhere from 100 to 1,000 tons, according to the size of the kiln and the solidity of the ware; the rough usage it is subjected to in emptying and setting, the fact will soon be apparent that in order to endure it must be as firm as the rock of Gibraltar.

Fortunately the clayworker has the right material with which to build it—brick—and clay for mortar. Neither lime nor cement should enter into its construction.

Robert Twells, Alton Park, Tenn.

In order to have strength there must be substance. Steel is strong, but it needs more than one strand of wire to pull a freight train of loaded cars.

So in the floor there must be no flimsy four-inch walls full of pigeon holes which have no strength in themselves and are impossible to clean.

They are like the first machinery that came up, which had to have wheels within wheels; numerous springs, weights and traps in order to be thought great.

But now the machine that accomplishes its purpose with the smallest number of movable parts is acknowledged to be the nearest to mechanical perfection.

As I think of the legion of complicated arrangements of kiln floors which are worked on to the unsuspecting inexperienced clayworker, I cannot help thinking of the question which the greatest of all Teachers asked His audience on one occasion, "Why do you spend your money for that which is not bread, and your labor for that which satisfieth not?"

In the second place, the floor must be arranged so it can be cleaned without disturing the surface.

Speaking of a round kiln, there should be a duct 30 inches wide and 52 inches deep run across the center at right angles to the flue leading to the stack.

Leading into this main duct and at right angles to it, there should be other ducts 12 inches wide and 52 inches deep; these should be opposite each other, so that a man in the center flue can hoe sand out of the small ducts by allowing the handle to pass into the small flue on the opposite side. The benches between these small flues should be three brick endwise apart. These ducts should all be arched over, the top of the arch to come within about 4 inches of the surface of the floor.

In the third place, it must be so arranged that it will have an even draft in every part.

First, measure the size of the opening leading to the stack and ascertain how many square inches it contains. I have found that openings 4 inches by 4 inches in the floor are the best size to have. As the total area of all the holes in the floor must not exceed the total area of the opening leading to the stack, you must decide how many holes 4 inches by 4 inches you can have in the floor. Having decided the number of holes, you must now decide the probable proper distribution of them. It will undoubtedly be wise to have one about 2 brick lengths from each door and two about 18 inches apart in the center. The others can be laid out at equal distances from each other over the different ducts in the floor.

When the floor requires cleaning the little section of arch between the two center holes can be taken out to form a manhole and when the duct has been cleaned out this piece of arch must be replaced.

In the fourth place, the floor must have a level surface.

As the floor is now completed within a few inches of the surface, we can take a little fine damp clay that will pack under the feet to level up with; on this we can lay a pavement, first laying the paving around the holes by laying two brick with their ends 4 inches apart to form the hole; then finish between the holes, then cover the floor with fine screened sand, and the floor is ready for use.

This is a first-class floor for tile, only it must have a course of brick on edge under the tile to allow the fire to draw through them.

In conclusion I want you to notice that the strength of the floor consists in the wide benches between the small ducts, and that the properly distributed draft consists in the fact that the total openings in the floor do not exceed the opening to the stack.

Now a word about the construction:

Of course, you can use what brick you wish to, and lay them in mortar if you want. But the brick are just as well laid up without mortar. The brick over the little ducts can be placed on edge and projected from each side until they arch over like they do in an up-draft kiln. Nothing requires to be laid in mortar except the center duct, and nothing can be improved by using mortar. More than this, if you wish to do so you can take the brick direct from the dryer and let the setters place them in and they will lay them as fast as they do their other setting, as it is just like setting the bottom of an up-draft kiln.

The shrinkage will be almost negligible, but you can allow for it. I claim for this floor that it is cheap to construct; easy to clean; easy to repair; and that it gives plenty of draft and the draft can be placed where it is most needed and easily controlled. (Applause.)

President Clippert: The discussion of this very interesting paper is to be led by Mr. John T. Hummert, of Quincy, Ill.

Essentials in Kiln Construction.

John T. Hummert: I am sorry that Mr. Twells is not here for I would like to look in his eyes and talk to him. He has given us a very valuable paper. The four points he has brought out are essential; namely, durabiilty, construction, open draft and the way of keeping the draft open.

First point, durability. Many a mistake has been made in building brick plants. A friend of mine built a continuous kiln. He wanted to save money on the fire brick. He went to parties and had a lot of fire clay shipped out to his plant and made fire brick by mixing some of his surface clay with the fire clay, and thought he was doing a great thing in saving money in the construction of the kiln. He came to me one day and said: "John, I wish I had taken your advice in regard to building my kilns. That experience cost me $6,000." The first burn he made in that kiln, the crown began to crumble up.

Another thing which is essential in brick burning is to have a clear draft. In order to distribute your heat equally to the kiln, you have got to have a clear draft and a free draft.

The next question to my mind is, which is the most profitable to use in burning brick, solid bottom or a perforated floor. I have burned brick in the old clamp kiln, in the up draft kiln with furnaces and in beehive kilns. Of course, these were all solid bottoms. I never burned any brick in a down draft kiln, and I cannot state whether a perforated floor is of more benefit than a solid bottom. To get right down to it, I think from my own experience I would prefer a solid bottom, because the heat has a tendency to rise and go upward. Now then by having a solid bottom you are able to get the bottom of the kiln hot. You have got to have a great draft and a great consumption of fuel. Therefore, I would say use solid bottom, although as I have stated before I have had no experience in down draft kilns. The beehive kilns were the kind that takes tall flues.

Now then you take the question of continuous kiln. I have used the solid bottom, although I think the Youngren kiln has perforated bottom. The continuous kiln has a cross draft, and that fire has to get from one department to another. You have got to heat that floor. If you don't, your fuel is not going to burn. You get the top by dampering. The heat travels over the bottom and goes into the crown of your kilns and goes over the heads. I can burn in a continuous kiln and get the brick just as hard in the floor as on the top.

I do not know that I could add much more to what Mr. Twells has said, but I want to thank you for your attention. (Applause).

President Clippert: This subject seems to have been pretty well covered, and if there is no further discussion on same, we will take up the next. Does any one wish to ask Mr. Hummert any questions?

Secretary Randall: The next number on the program is a paper on "Co-operative Manufacturing," by Frank W. Butterworth, of Danville, Ill. Mr. Butterworth intended to be here this morning, but has been called to Chicago on business connected with the State Council of Defense. So we will have to pass that and take up the next which is "The Nation's Fire Waste, Its Prevention." We have with us a representative of the National Board of Fire Underwriters of New York City. Mr. Mallalieu, the general manager was to have been here, but he found he was not able to get away and so has sent a representative, Mr. H. C. Brearley who has come all this way to make us an address on a subject which is of very great importance to all of us.

"THE NATION'S FIRE WASTE—ITS PREVENTION."

H. C. BREARLY, THE NATIONAL BOARD OF FIRE UNDERWRITERS, NEW YORK CITY.

Mr. President and Gentlemen of the National Brick Manufacturers' Association:

I suppose that it is hard for anyone to get very far from his own specialty. Most of you gentlemen doubtless live in a world of brick. To your minds, in all probability the word "city" is at once visualized as a few square miles of brick buildings, with a certain number of almost negligible human beings running about the streets. In the eyes of a sufficiently enthusiastic brick manufacturer, I presume that a landscape may seem like unnecessary camouflage above the clay deposits from which bricks might be made.

Please do not think that there is anything derogatory in this line of thought. On the contrary, I am about to show you that we, of the fire underwriters, are apt to think of our environment in terms of fire, even while yet in this life, and am merely anxious to establish the fact that there are others whose viewpoint is as specialized as our own. In all seriousness, for it is a serious subject, we find ourselves looking out over an America which seems largely to be engaged in the occupation of burning up.

While you fortunate mortals are thinking in terms of construction, we are forced to give attention to the vastness of the processes of destruction. Suppose, for example, that any one of you were transferred for a few hours to the Actuarial Bureau of the National Board of Fire Underwriters at 76 William street, New York City. He would see a small army of typists, filing clerks, tabulators and other employees, with the assistance of the most complicated classifying and tabulating machines, and surrounded by far-reaching rows of files, working busily all day upon—what? Upon recording and analyzing the reports of some fifteen hundred separate fires which reach them through the mail each day.

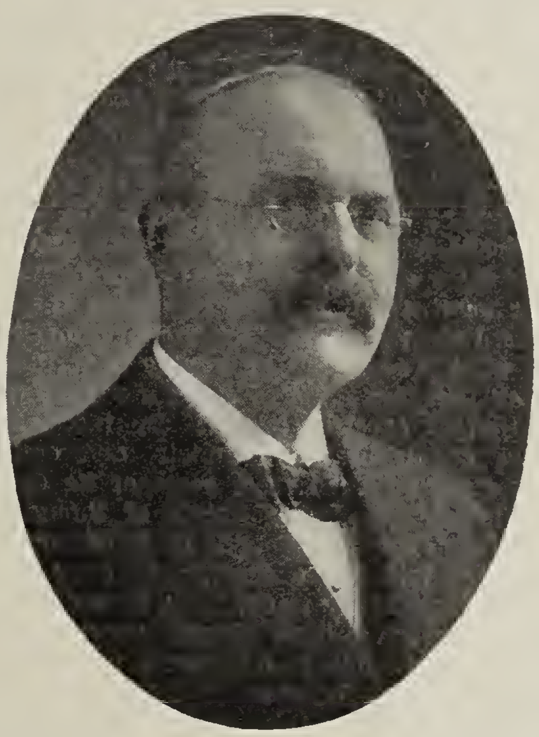
Suppose that one of you should enter this department at the opening of office hours in the morning, before any of the day's mail had been examined. There are certain assumptions that he could safely make in advance, if it proved to be an average day. One is that the records to be noted would indicate a rate of burnings averaging a trifle more than one per minute for the entire twenty-four hours. Another is that the various fire causes would turn up in about the following proportions:

> 115 fires from the careless use of matches; 100 from electric smoothing irons and other household attachments; 85 from defective chimneys and flues; 83 from stoves and furnaces; 74 from sparks on roofs; 52 from careless smokers; 25 from incendiaries; 25 from natural and artificial gas; 22 from spontaneous combustion; and so on, with a great variety of other causes.

Even the least of all causes noted in the Actuarial Bureau reports—that of hot and molten metal—would show two new fires in the day's figures. Of course, you will understand that these figures are based upon the assumption of an average day. An individual day might show lower figures, which would be balanced by higher returns upon another day—but the average for the year would run about as indicated.

Now, gentlemen of the Brick Manufacturers' Association, you have been standing with me in spirit at the statistical center of American fire destruction. Perhaps you may have thought it a rather exaggerated form of words when I referred to our "environment of fire." It may have sounded like poetic license, and hardly worthy of the attention of thoughtful business men—but now that you have been hearing some facts, and seeing some figures, does it still seem exaggerated? Do you still wonder that the subject impresses us as one of the great outstanding facts of American economics?

In order to make this clear, it is only necessary to reflect that $250,000,000—the estimated fire loss for last year—would meet 4 per cent interest rates upon $6,250,000,000 worth of Liberty Bonds, while if the fire tax is recorded in its larger aspects—if to this total of direct fire destruction there is added the definitely traceable indirect expense of fire, the showing is amazing.



Jotham Post, East Williston, L. I., N. Y.

Several years ago, in preparing some statistics, we found that the nation's fire tax—that is, its direct and indirect losses—equalled the combined value of the American production of gold, silver, copper and petroleum. Four of our greatest resources were thus neutralized by a valueless and inexcusable ash-heap.

Have I made good the statement that this is a big question of American economics? Of economics, be it understood, merely under normal conditions, for in this year of titanic struggle, it rises to be a question of patriotism and of humanity, as will hereafter be shown. In the meantime, let me touch upon another phase—the psychological. Does this sound far-fetched? Does this sound as though obsession with a particular subject were leading to extreme deductions? Assuredly not, if you have been thoughtful observers in your imaginary visit to the Actuarial Bureau.

We have been looking at the subject in mass. We have been considering America as a nation, and fire loss as an abstract thing, expressed by eight or nine figures following a dollar sign. But, of course, we know that America consists of a large number of individual Americans, and that the huge total of the fire destruction comes from the adding together of some hundreds of thousands of absolutely distinct fires. Therefore, when we dip our hands into the torrent of reports pouring through the Actuarial Bureau and pull out the records of some of these individual fires, we find ourselves face to face with the names of towns and of people, and the accounts of the causes of these fires, wherever such causes are known. And then, there is borne in upon our minds one unescapable fact, namely, that a very large proportion of all these fires should never have occurred—that they were preventable in a great degree.

Here, then, are a few cases chosen practically at random from the reports of a single day last week:

Defective flue in a Missouri farm house; damage, $4,081.

Molten glass in a Pennsylvania factory; damage, $80,957.

Careless smoker in a New York factory; damage, $20,982.

Careless smoker in a New York printing shop; damage, $13,934.

Careless smoker in Massachusetts store; damage, $13,200.

Careless smoker in a California distillery; damage, $56,413.

Thawing frozen water pipes by means of a torch in a Connecticut hotel; damage, $10,750. This common practice is most inexcusable, hot water being the thing to use for the purpose.

Sparks from stack in a Tennessee factory; damage, $29,637.

Overheated stovepipe in a Massachusetts drug store; damage, $5,065.

Poorly installed stove in a Pennsylvania drug store; damage, $3,450.

Defective heater in a Massachusetts department store; damage, $54,604.

Electric iron in a California clothing store; damage, $37,228.

Unknown cause (but suspicious) in a New York chemical plant; damage, $165,768.

Unknown cause (but suspicious) in a Maryland pier; damage, $128,057.

These instances represent hardly 1 per cent of the reports received in that single day, which was a fairly average day. They might be paralleled on practically any other day throughout the year.

Now, one individual may be careless enough to imperil his property, the lives of his family and the safety of his neighbors, and that will prove nothing save as regards that individual, but where you take from a single day's mail such diverse and widely separated cases as these, it is hard to escape the conclusion that they throw some light upon the character of Americans, *as Americans*. That is what was meant by saying that these figures have a "psychological" bearing. There is no denying that we Americans are a nation of careless people. By instinct, tradition and environment, we are incurable optimists, and optimism, while a desirable thing, must be freed from some of its dangers. We are too prone to take chances. Our habits of thought are keyed to the idea of frequent change. We put up buildings in the expectation that they need last but a few years, since expected growth will soon call for their replacement with larger buildings. Hence, it seems natural to give them flimsy construction. Incidental waste seems to us negligible in a country where every one hopes to make his million before he dies.

Europe doesn't figure in this way. Where our average fire losses for a number of years past have been about $2.50 per capita, the figures for the last year preceding the war were 49 cents for France, 33 cents for England, 28 cents for Germany, 25 cents for Italy and for Austria and only 11 cents for Holland. The inhabitants of these countries have learned through the pressure of generations of necessity to practice habits of carefulness, where we have not. Fire is fire in those countries, just as it is here. It will spread as swiftly and burn as fiercely if it gets the chance.

Secretary Randall: Is it not true that the low fire cost is due not alone to preventable cause, but to the manner of construction? They build with brick, do they not?

They do. I am coming to that. Here is a clipping that came to my desk from a St. Louis paper, repeating a little story that had come to them under the head, "The Spirit of American Soldiers."

> "The troops were going through a village in France and a small fire broke out, which the American soldiers put out. The fire apparatus had not been used since 1873, but the hose was all right, and when it had been attached to the fire apparatus, performed its function well for the Americans. *It was the first fire in the village in forty-five years.*"

Can you find an American village to compare with these figures?

Then there is another consideration—one that is more intense and imperative at the present time—one that overshadows economics, and overwhelms psychology in this critical climax of humanity's greatest struggle.

We must not talk here today as manufacturers and underwriters. These are not the times for ordinary classification, or for ordinary habits of thought. We are in the heart of a world convulsion. The duty of winning this war, to make safe the future of democracy and to establish the supremacy, not merely of right, but of right over the foul forces that would enslave humanity, makes every other consideration comparatively unimportant. We, of America, are coming to realize with deep seriousness how vital is the part which we must play. We are losing our complacency, our sense of being spectators, our "business as usual" frame of mind. We are discovering what it means to be real participants in this war of incredible vastness.

When the hordes of efficient barbarians broke over the borders of France that heroic country recognized in an instant that she must devote her last ounce of energy to the defense of her national life and of the existence of civilization. It took but a few months for England to realize the same fact, and today, her entire social, financial and industrial fabric is upon a war basis. And now, in turn, we of America, jolted from our peaceful outlook upon life, must not be behind our great allies in the completeness of our response to the call of liberty and of right.

Consider that upon this country, to a peculiar degree, rests the responsibility of furnishing the manufactures, the food and the other supplies upon which the winning of this war depends. Consider that we are being frantically urged by our hard-pressed allies to speed up production in these vital matters. And then, consider that clouds of unnecessary smoke are rising daily throughout the country, as monuments to the destruction of these supplies and the crippling of the machinery of their production. I have said clouds of *unnecessary* smoke. This point cannot be too strongly emphasized, since, whether these fires have been due to the torches of our foes, or to the common—too common—causes with which we are all so familiar, they almost invariably imply sins of commission or of omission—reprehensible carelessness upon the part of one or more individuals, or the lack of those precautionary measures which would have rendered fires difficult to start, easy to detect and simple to extinguish.

President Wilson has said: "Preventable fire is more than a private misfortune. It is a public dereliction." And he has added: "At a time like this of emergency and of manifest necessity for the conservation of national resources, it is more than ever a matter of deep and pressing consequence that every means should be taken to prevent this evil." To this, he might have added that most fires are preventable. In saying this, we must by no means confine our attention to these few conspicuous blazes in factories or storehouses; we must remember the balance of the "more than one a minute," which makes up the shocking total of 1,500 per day.

Consider this fact, gentlemen: Not to speak of the fires which have already occurred, there will be 1,500 new fires tomorrow, in all probability—fires that have not yet broken out—fires which need not break out—fires, many of them, so clearly unnecessary as to be almost criminally reprehensible. Some of them may be very destructive, but even if there be no single great fire in tomorrow's list, the total will hardly fall short of hundreds of thousands of dollars of absolute destruction of wealth, of waste in national energy and resources.

Imagine a runner starting upon a gruelling race, bleeding from many veins. That is what the United States is doing. If it were necessary, we should have to reconcile ourselves to the fact, and try to win through in spite of it. But it is not necessary, and two of the big duties of every patriotic American, of you and me, as well as of any others, are, first, to see that fires in all property subject to our control are made as nearly impossible as human foresight can provide, and, second, to see that the gospel of fire prevention is preached wherever our influence extends.

Now, gentlemen of the National Brick Manufacturers' Association, with your permission, let us bring this matter down to a very personal application. I hope that I shall not abuse the privileges of a guest, but I have not traveled six hundred miles to make an academic display of facts and figures for your edification. I came to get results.

You are the responsible representatives of a great American industry. Your recommendations will carry large influence with all your members, wherever they be located. Similar national associations are found in most of the other leading industries. In the aggregate, your association and these others may be considered as standing for practically the entire industrial structure of our country. You may have been convinced that, as patriotic Americans, you have individual responsibilities in the matter of the nation's fire peril. But do not forget that your collective responsibility as an association is a good deal more than the aggregate of your individual responsibilities. You are in a position to take action, to pass resolutions, to make your voice heard and your weight felt, as individuals cannot do.

This thought of fire hazard is not a new one to brick manufacturers. It is fundamental in your business. Indeed, it is one of the chief reasons why you are in business. But opportunity cannot be divorced from responsibility. You must serve, where you profit. Upon you, and upon other manufacturers of fire-resisting building materials, there devolves a large measure of the natural leadership in fire prevention education. This association can make its voice heard for a long distance. Let that voice now call not merely for *more* bricks buildings, but for *better* brick buildings.

It may be true that a brick, as a brick, will pass through a considerable fire, without being consumed; but it is also true that a well constructed building, largely of wood, may be less liable to destruction than one flimsily constructed of brick. We receive an appalling number of reports of fires in flimsy brick buildings. In the 85 fires reported each day from defective chimneys and flues, it must not be overlooked that this extraordinary fire cause, with its millions of dollars of damage each year, is traceable largely to chimneys built of brick. If this nation suffers from conflagrations which could not be conceived in most European cities, it is not simply because Europe builds more largely of masonry, but because it builds solider, better buildings.

Your responsibility must not be considered as ending when you have made good brick and have sold them. We are changing our old-time notions in such matters. No man liveth to himself any more. If your association will make its strong voice heard in the demand for better buildings, whatever be their material, it would accomplish results.

We shall not presume to suggest the ways and means by which this should be done, but are merely putting it squarely, pointedly, and perhaps uncomfortably, up to this convention.

What are you going to do about it? (Loud Applause).

General Discussion.

Secretary Randall: We will be very glad to have your suggestions, Mr. Brearley, if you will make them.

Mr. Brearley: It is largely an educational process that is called for. I should say the needs are largely educational and legislative. The National Board of Fire Underwriters is already trying to reach individuals in regard to the danger of careless personal habits, but you have direct relations, we take it, with architects and with contractors, and, at least through your members, with building owners everywhere, and it should be no difficult matter to establish a higher standard of construction. That matter has been worked out in considerable detail. We have a Committee on Construction of Buildings, in charge of one of the best experts in the country, and we would be very glad to meet any suggestions you have to make for co-operation. You have the means of circulating matter where it would do the most good, and of getting action on it.

Mr. Dunwody, Macon, Georgia: I am sure that we are all in sympathy with the ideas just expressed, and that we shall be glad to help in any possible way. I am wondering whether you could not get the newspapers to pay more attention to the subject of fire losses and fire causes. I am sure that not one man in a thousand has any idea of the number of fires that occur in the United States daily. They have a very adequate idea of the means and causes of preventing fires. If you could put something of this sort in every newspaper, it would no doubt help in educating the public.

Mr. Brearley: Suppose The National Brick Manufacturers' Association should make that suggestion in written form, to The National Board of Fire Underwriters to see if the newspapers of the country would be interested in getting that data. This might not be a bad way to present the question.

President Clippert: This has been a very interesting subject and has been treated in a very instructive way, and I wish on behalf of our members to extend our thanks to Mr. Brearley for delivering this message to our convention. Is there any discussion on this subject?

H. H. Stafford, Augusta, Georgia: I want to accept the challenge Mr. Brearley has thrown down. I started my career as an inspector of the Factory Mutual Insurance Company, of Rhode Island, and travelled over the country for years in that capacity. On the twenty-second day of March, 1915, a woman in the repair department of a dry goods store left an iron on the board at closing time. Fifteen minutes after six o'clock, a fire occurred in an office building one block from my office which resulted in the destruction of my office, my home, and six million dollar's worth of property in the City of Augusta. It burned the finest residence section of the city, a wholesale destruction of things of incalculable loss for people who were not responsible. I have played in a great many roles in our little town, which has a population of about 55,000 ordinarily, and now has 90,000, including the soldiers.

During that fire, the wind was blowing about ninety miles an hour, and that fire jumped for squares at a time. My house was burned because my next door neighbor had a shingle roof. My house was built at a time when brick were imported from England, before the clay industry had started in this country. I played in politics some, and during my service in the council, we passed a resolution prohibiting the use of shingle roofs. But through the influence of builders and contractors, and users of other materials, the ordinance was cancelled very promptly. I used my influence then, and have since, with your fire underwriters, to do something to prohibit and keep the politicians from playing politics with fire. You make an absolute difference of about fifteen cents per hundred on the shingle roof buildings, as between the tile or metal roof.

Mr. Brearley: The National Board has nothing whatever to do with rates. The question of rates is something dealt with in every section by the local rate-making bureau. The National Board of Fire Underwriters has had nothing to do with rates for about forty years. There are a number of rate-making bodies in different sections.

Mr. Stafford: I think this is a time for constructive criticism. Why is it that the Southeastern Underwriters' Association doesn't have different rates? Touch a man's pocket; that is one way to reach a man. Why don't they prohibit or make it almost impossible for people to have shingle roofs by making the rate high? In the construction of a frame house at this time, there is a flue through the hollow space between the walls—at least this is true of every frame house in the South—a hollow space leading from floor to ceiling, and in a fire which starts at the bottom of the house, the flames shoot up from floor to floor before you have time to think. Why don't you people refuse to insure a house unless it has a stop at every floor to stop the fire? I think these two things would reduce the fire waste.

Shingle Roofs Should Be Penalized.

In that Augusta fire, it would have saved $5,000,000, if we had had fire-proof roofs. The only way possible, in my opinion, is to penalize the city which permits shingle roofs. And if you would refuse to insure houses that have these open flues through the walls, you would stop their building. I do not think we ought to be so selfish in the discussion of this question as to try to enforce brick in every building, because that is not practical, as much as we would like to see it done. But if you would refuse to insure buildings which are extraordinary fire hazards, you would go a long ways to equalize frame and brick, where now there is only a difference of about twelve cents, in insurance rates. We would be doing something at the same time to encourage the use of brick in the building of houses. Of course, we do not permit any business houses of frame.

I am certainly delighted to have been here and heard Mr. Brearley's talk. If this body of men, representing all sections of the country, co-operate with your Association in a reasonable, practical and sensible way I believe the fire loss could be reduced very materially in the next few years.

Mr. Brearley: I am very glad indeed to have this question asked. The only way we can get at anything in regard to these matters is by open discussion. The question this gentleman has broached is one with which The National Board of Fire Underwriters has nothing to do—that of making rates. The Southeastern Underwriters' Association and other associations have this function in the different parts of the country where they work. I want to say that you have no idea of the amount of work that has been done, not only by The National Board, but also by the Southeastern Association, in particular, with regard to the evil of shingle roofs. If you knew how persistently that one subject has been talked about, you would realize that underwriters consider it to be the very largest element of conflagration hazards. More conflagration losses occur from shingle roofs than from anything else. The old-fashioned underwriter—and a few survive today—refused to have anything to do with fire prevention. He felt that it was his duty to write risks as he found them, and to charge accordingly.

The underwriter of the new school believes that he has a duty to perform in the prevention of fire, even if it means a reduction in the premium.

All walls should have fire stops. We have frequently expressed ourselves upon the importance of fire-stopping in walls, and of many other features in fire-resistive construction, but, in the meantime, there are countless buildings containing risks which still must be insured. It is the effort of rate-making organizations to make an exact charge for those risks. This must include a consideration of many things in addition to the condition of the building, itself. The question of fire protection in a town, such as the matter of water supply, the condition of the streets, of politics in the fire department, whether the fire department is making a practice of systematic inspections, etc., etc.

Out of the millions of buildings insured, there are probably many cases in which the rates are not an exact measure of the risk, but we can say, with a great deal of confidence, that there is a purpose to get the rates as nearly exact as possible. It is hard to imagine a more complicated and difficult financial problem than that of fire insurance rates. It sometimes seems as though financing the European war would be a simple proposition compared to making absolutely exact rates, where it is necessary to get together and estimate correctly, all the different elements of fire risks.

Your expression of a desire to co-operate is most acceptable to The National Board of Fire Underwriters. (Applause.)

The Building of Frame Houses Should Be Discouraged.

John T. Hummert: I only want to add a word and that is this, that every city of any size should have a fire limit ordinance which should be enforced. In our little town of Quincy, we had a Fire Ordinance Committee of which I was a member. We thought we would make a change so that stucco construction should not be permitted in the fire limits, because the committee considered that just the same as a frame building. We also put a limit of shingle roofs not be permitted in the fire limits. The committee was unanimous in favor of adopting the ordinance, and this ordinance was afterward adopted by the Council, with the exception of the stucco. The stucco people used as an argument that if a man has an old delapidated house he can put some stucco on it and it will improve the appearance of the neighborhood and make the city more beautiful. Therefore that part of the ordinance did not carry. Now the trouble is the ordinance is not enforced. The fire chief says he will see it is enforced if the city authorities order it, but the building inspector says if the aldermen instruct him to enforce it, he will do it. The thing for us to do is not only get these ordinances passed, but to see to it that the law is enforced.

W. E. Dunwody: I move that the chair appoint a committee of three for the purpose of taking this matter up with the National Board of Fire Underwriters, and that our Secretary be a member ex-officio of that committee.

H. H. Stafford: I second the motion.

M. E. Gregory: Before that motion is put, I want to touch on one thing. If we were to call the roll this morning of the number of brick manufacturers making brick in wooden buildings, I think we would blush. If we would send out a committee to investigate our brick plants, I think we would be surprised at the reports, for we have some real fire traps. It is my misfortune to be connected with, or fall heir to a fire trap, in a way, and I have been twenty years trying to rebuild it on proper lines. I want to say a good many of the high rates of insurance, we are to blame for, in the construction of our plants. Another thing, how many of you allow a machinist to use a torch to repair the machinery. We ought not to allow a torch to be used in that way, either an electric light or a flash light, or some other way should prevail in making repairs. I believe half of the brickyard fires are due largely to that reason.

Motion was put by Chairman Clippert and carried.

President Clippert: I will announce that committee a little later.

Secretary Randall: I want to rise to a question of privilege. I know you are all glad you came to Indianapolis. This talk we have just listened to this morning was worth more than the entire cost of coming to the convention, but I want to introduce to you one of the men who made it possible for you to come to Indianapolis. This is the man behind the gun, the Chairman of the Executive Committee, Robert Elliott, senior. (Applause).

President Clippert: I believe we have some papers left over from yesterday. What is the next order, Mr. Secretary?

Secretary Randall: This brings us to a paper on "Simplified Accounting for Brick Manufacturers" by Mr. George C. Olive of Indianapolis. Mr. Olive regrets that he must leave immediately and will not have time to read his paper, but we are glad to introduce Mr. Olive that he may say a few words to you.

George C. Olive, Indianapolis: As Mr. Randall has said, I regret that I must leave, but I have been called out on an important case, which happens to be a defalcation case. I put them off this morning, but I have an appointment to be there at one o'clock, and as it is quite a distance out, I cannot take any more time. My paper really does not amount to much. I tried to make it as simple as possible, and I really think I could have given you more in the discussion of the paper in the consideration of your own problems after the reading of the paper. Mr. Stevens is to lead in the discussion of the paper, and I find in talking the matter over with Mr. Stevens that he knows more about accounting for brick plants than I do, so I feel certain you will get without me here, a great deal of value out of the discussion of the paper. I dislike very much to have to go, but I suggested to Mr. Randall if we would get Mr. Stevens to read the paper for me I will appreciate it very much. I have had quite a bit of experience in investigating the accounts of brick manufacturers in my services as a public accountant, and three or four years ago, I installed a system for one of your members, the International Brick Co., of El Paso, Tex., which as you possibly know is owned by the Bricklayers' and Plasterers' International Union. I happen to be the public accountant who handles the Union's accounts, and have looked after this ever since it was established. If my paper gives any of you any suggestions or ideas which you can work out for yourselves, I will be very glad. (Applause).

SIMPLIFIED ACCOUNTING FOR BRICK MANUFACTURERS.

BY GEORGE S. OLIVE, C. P. A.

Mr. President and Gentlemen of the Convention:

You have no doubt listened at your former conventions to talks on the desirability of having up-to-date methods of cost keeping, and I am almost safe in assuming that these talks which you have partly from your own members and partly from professional accountants have developed in you a feeling of antagonism toward a speaker with the subject which has been assigned to me. After your secretary came to me with the request to talk on simplified accounting methods for brick plants, with specal emphasis on the simplification of these acounts, I took the opportunity to go over some of your former proceedings to see just what kind of information had been offered you along this line. The addresses which have been given were evidently made by men who were much more familiar with brick manufacturing than I am, and I do not wish to disparage in the least the value of the information which they have tried to leave you. I may not be any more successful than they have been in dispelling the cloud of uncertainty which is generally left over a group of business men when a talk on cost accounting is made to them. However, I shall attempt to stick to essentials and to make my ideas understandable to the ninety per cent of your members who are operating comparatively small brick plants, the revenue from which does not justify the employment of a bookkeeper of very much experience.

First let me qualify to speak to you by telling you that during my public accounting experience it has been my privilege to make examinations of the accounts of several brick and tile making plants of various sizes, and during the last three years I have installed and supervised the keeping of the accounts of the International Brick Company, which as many of you know, operates a very modern plant at El Paso, Texas.

In order to get clearly in mind what I shall suggest with reference to accounting methods, it is necessary for you to have a good understanding of the principles which underlie the keeping of these accounts. I wish first to assure you that there are no essential differences in the accounts as they should be kept by a brick plant owned by an individual, a co-partnership, or a corporation.

A brick plant is a manufacturing institution, and like all manufacturing concerns it takes certain raw material, in this case clay and shale, puts labor on this raw material, incurs certain plant and general expenses, and has then the finished product ready to be sold. There are three fundamental kinds of transactions which must be taken into consideration in the accounts. The first is the purchasing of material, supplies and labor, the second is the selling of the product, and the third is the receipt and disbursements of the money which comes as a result of the sale of product and the purchase of material and labor. In order to keep proper records of the kinds of these transactions, it is necessary to have books which fall into two different groups. The first group includes those of original entry and include the time-honored day book, journal and cash book. The second group includes the ledger or ledgers. I wish to impress on you the fact that the ledgers serve only to accumulate in separate accounts the transactions which have already appeared on the books of original entry, each separate ledger account grouping together on the one page only the items from the day book, cash book or journal, which affect that particular ledger account.

Original Entry Records.

Every one of you who has attempted in any way to keep books is familiar with the principle of the day book, which was simply a consecutive blotter record of every transaction affecting the business. For instance, if your customer, T. A. Randall, comes in to your office and pays an account of $46.00 which you have against him, you enter the date and, ordinarily "Cash $46.00 to T. A. Randall $46.00." entering the two amounts in each of the two parallel columns, the second amount on the line immediately under the first one. This information was usually carried in just about the same form to a cash book. Any information affecting receipt or purchase of material, or disbursement of cash in payment for purchases, was entered in the day book and carried from that book into the journal or cash book, and posted from those sources in the ledger accounts. Many of you are keeping your accounts at present in just this way, and I do not wish to represent that you can not obtain the essential information concerning your business from books kept in this manner. However, I do wish to impress on you the fact that accounting methods have been improving in the last twenty years just as machinery has been improved, and just as in the case of improvements affecting manufactured products, these changes in accounting methods have concerned themselves principally with cutting out duplication of work, eliminating any steps which did not serve some useful purpose, with the object of providing for the manufacturers and owners of various businesses the essential information which would permit them to operate the plants more intelligently. You must appreciate the fact that the use of the old fashioned day book, as I have outlined it above, results in a duplication of every bit of information which was put into that day book. This record in most progressive concerns has therefore been eliminated, and the information which was formerly first entered in this day book is now placed as the transactions occur in the cash book or the journal.

Cash Receipts and Disbursements.

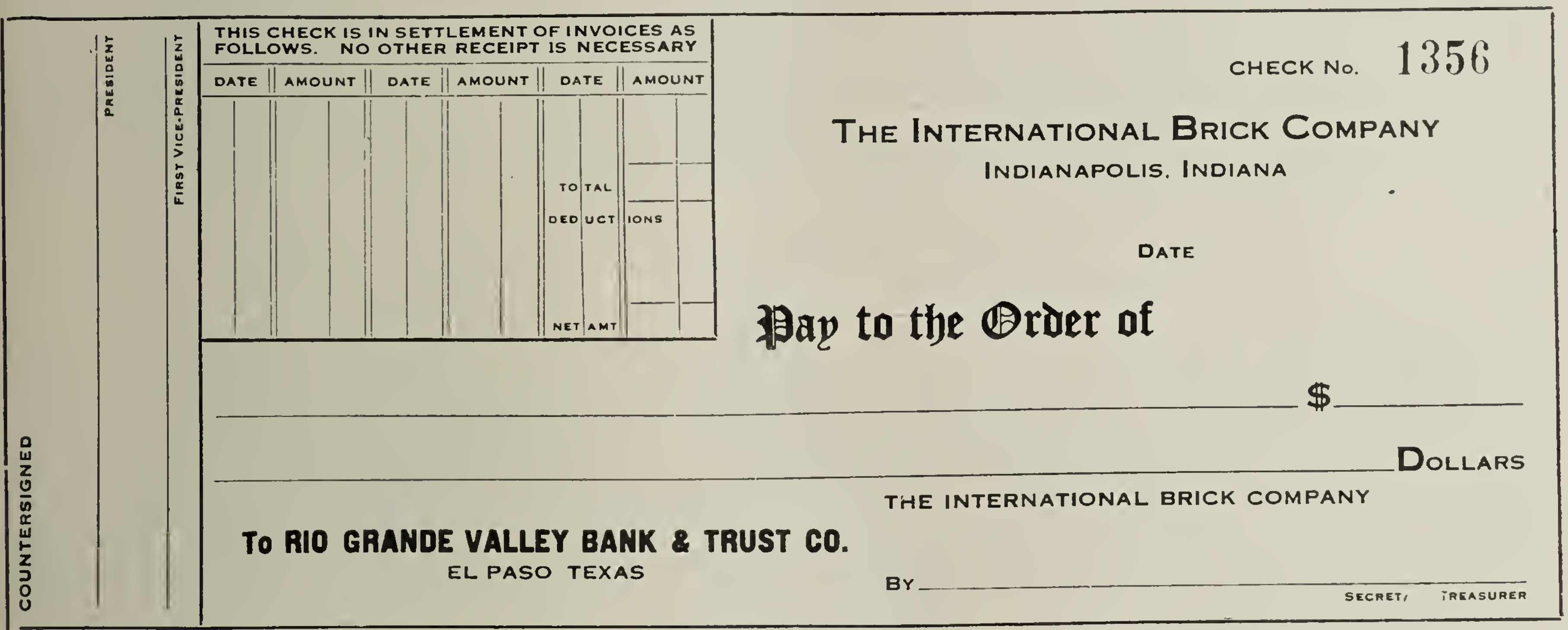
The time has long since passed when it is advisable, or even possible, for the receipts and disbursements of a business, even though it is owned by a single individual, to be handled in any other than the best ways. It is now common practice among better managed businesses to deposit in bank the exact amount of money received, and to make all disbursements by check. This rule should hold good for every item of receipt, and for every cent disbursed, even though the receipt is only 50 cents for a load of bats. If this rule is made, the bank account will reflect the entire cash business of the concern, and every cent of disbursements will be represented by a cancelled and endorsed check. I wish to suggest for your consideration the use of a check similar to the one which is shown herewith.

The reverse of this check is entirely blank for use in endorsing by the payee and by the various banks through which the checks must come. You will notice that the face of the check carries a definite reference to the item being paid, so that the cancelled and endorsed check is as good a receipt as you can obtain for the settlement of that particular item. If the plan is adopted of depositing in bank all receipts and making all disbursements by check, it will be apparent that receipts have absolutely no relation to disbursements so far as the original records on the cash book is concerned, and that the bank balance is the cash balance. For these reasons the former method of making entries in the cash book has been changed so that the cash book is now divided into its two elements, one covering cash receipts which are deposited in bank, and the other covering disbursements which are payments out of bank, and which therefore constitutes a check record, these two separate records of cash receipts and cash disbursements being kept in the same book or the same binder; but as they have absolutely no close relation to each other, there is nothing at all to be gained by keeping them on opposite sides of the same sheet in the book. It will almost invariably be the case that the number of items of cash receipts vary materially from the number of items of cash disbursements, and you will simply be wasting valuable printed and ruled paper by attempting to keep them as cash books were formerly kept. I show herewith a form of cash receipt record which is being used more and more by progressive concerns.

You will notice that it is ruled into columns providing for date, name of concern paying, or other descriptive matter, and amount columns as follows: One which carries the aggregate amount for the credit of the customer, and another column which can be used to credit other accounts in the ledger than those of customers. On the same line crossing the page as the amounts which are credited will be entered in the appropriate columns all deductions from the credit amounts, as for instance, discounts allowed to the customers, freight allowed, or interest which may be deducted in advance by the bank, and finally the amount of net cash received which goes as a charge to the bank account. You will note that the charges to bank and the amount of deductions will equal the total of credits which are made. Therefore, the page will be self-balancing; that is, the sum of the totals of the credit columns will equal the sum of the totals of the charge columns. These totals are carried forward through the month, and are posted at the end of the month to ledger accounts, the individual credits to customers accounts being posted, however, through the month to the credit of these individual customers.

I wish to call your attention to a form of check record, which as already indicated is nothing more than the disbursement side of your cash book.

This form of check record is made up on the same principles as



COUNTERSIGNED

PRESIDENT

FIRST VICE-PRESIDENT

THIS CHECK IS IN SETTLEMENT OF INVOICES AS FOLLOWS. NO OTHER RECEIPT IS NECESSARY

DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT
				TOTAL	
				DEDUCTIONS	
				NET AMT	

CHECK No. 1356

THE INTERNATIONAL BRICK COMPANY
INDIANAPOLIS, INDIANA

DATE

Pay to the Order of

$

DOLLARS

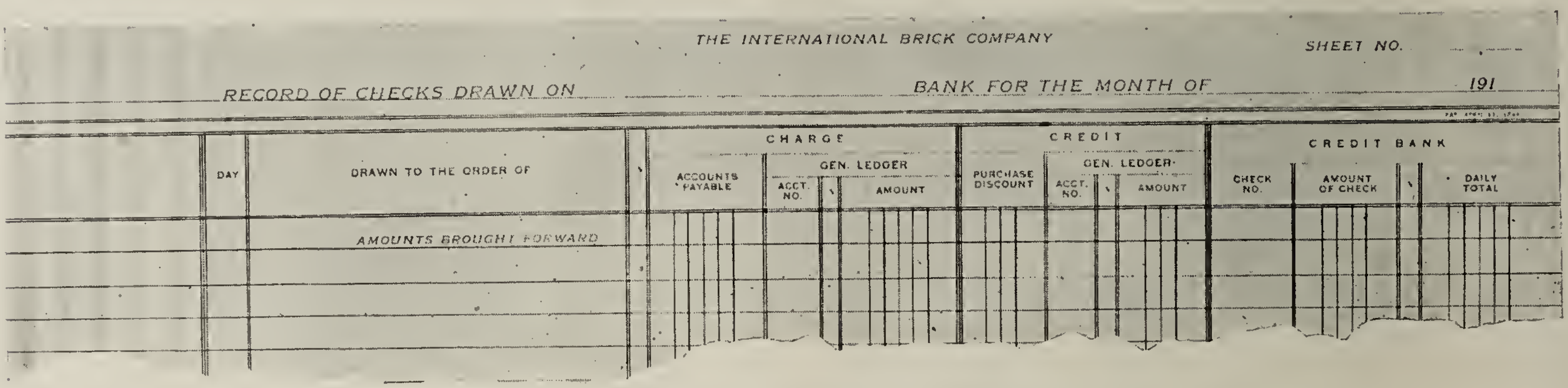
THE INTERNATIONAL BRICK COMPANY

To RIO GRANDE VALLEY BANK & TRUST CO.
EL PASO TEXAS

BY
SECRET'Y TREASURER

Form of Voucher Check Approved by Accountant Olive.

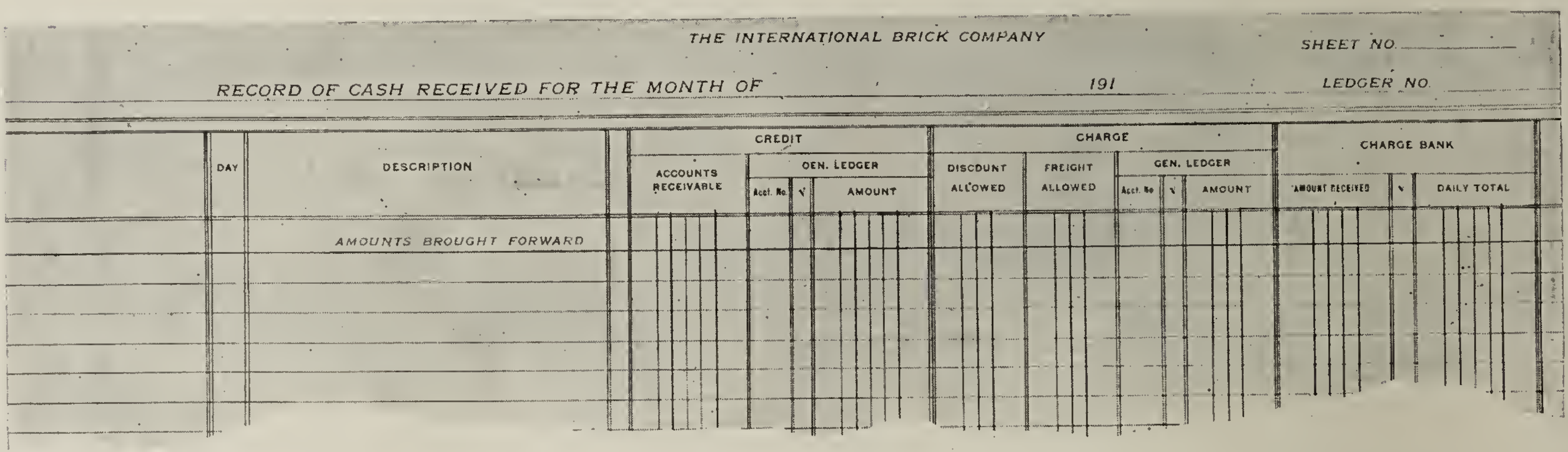
the form of cash receipt record, but as the transactions result in money being disbursed and a credit to the bank, you will see that the charges and credits are just the opposite from those on the cash receipt record. Instead, however, of the principal charge going to accounts receivable, it is placed in the first column of accounts payable. Any deductions which are made in settling a bill show up in the appropriate columns, and the net amount of the check, together with the number of the check, is carried in the column indicated. This page is also self-balancing. In using the form of check above indicated, together with this check record, I wish to draw your attention particularly to one fact. Most of you have been in the habit of using check books which are furnished you by banks, in which the check is attached to a stub. It is customary to enter on the stub just the information with reference to date, name and amount as is carried on the check itself, and subsequently to copy from the stub the information into the cash book. What I wish you to realize is that this means a useless duplication of every disbursement which is made, and I wish to urge you to discontinue the use of the check stub, making entry after the check is written directly in to the check record. This not only cuts out the additional work, but also saves an additional chance of making mistakes. You will notice that both the cash receipts record and the check record provide columns for entering the daily total of cash received, which is the amount deposited, and the daily total of check issued. By taking into consideration the balance at the beginning of the month, plus deposits as made, and deducting the daily total of checks as issued, you will keep a running record of your bank balance with much less work than is necesary in using the check stubs, and with much less liability of making errors.



THE INTERNATIONAL BRICK COMPANY
SHEET NO.
RECORD OF CHECKS DRAWN ON BANK FOR THE MONTH OF 191

				CHARGE				CREDIT				CREDIT BANK			
					GEN. LEDGER				GEN. LEDGER						
	DAY	DRAWN TO THE ORDER OF	✓	ACCOUNTS PAYABLE	ACCT. NO.	✓	AMOUNT	PURCHASE DISCOUNT	ACCT. NO.	✓	AMOUNT	CHECK NO.	AMOUNT OF CHECK	✓	DAILY TOTAL
		AMOUNTS BROUGHT FORWARD													

Check Record. The Disbursement Side of Cash Book.



THE INTERNATIONAL BRICK COMPANY
SHEET NO.
RECORD OF CASH RECEIVED FOR THE MONTH OF 191
LEDGER NO.

				CREDIT				CHARGE					CHARGE BANK		
					GEN. LEDGER					GEN. LEDGER					
	DAY	DESCRIPTION		ACCOUNTS RECEIVABLE	Acct. No.	√	AMOUNT	DISCOUNT ALLOWED	FREIGHT ALLOWED	Acct. No	√	AMOUNT	AMOUNT RECEIVED	√	DAILY TOTAL
		AMOUNTS BROUGHT FORWARD													

Cash Receipt Record.

Sales Records.

It has no doubt been customary for most of you in making sales of products to have some form of report from the yard showing the name of the customer, and the quantity and kind of product sold; and this information was used to make up the invoice which was sent out to the customer. As soon as this invoice was made, it was no doubt copied into a journal and copied from the journal to a ledger account. It is desirable to have the invoice form made up in such a way that one carbon copy of it can be made, this being possible even though the invoices are not made on a typewriter and I show an invoice form made up in this way. By numbering the outgoing invoices consecutively, you will be certain that all of your sales are properly accounted for, the number being indicated on the yard report as well as on both the original and carbon of the invoice itself. The original, of course, is sent to the customer, and the carbon copy filed in a post binder. These carbon copies of the outgoing invoices will really constitute the sales journal, and the use of the carbon copy will eliminate the necessity of copying all of the information from the original invoices. You will have in your own office just exactly what shows on the charge as it went to the customer, and from this carbon copy the posting should be made to the customer's ledger accounts, all postings showing the date, number and amount of the invoice. Wherever it is possible to use a typewriter in the preparation of these outgoing invoices, it is desirable to go one step farther and make two carbon copies of the invoice, the first carbon copy being used as a sales journal, as indicated above, and the second carbon copy being filed alphabetically according to the name of the customer in another post binder, the accounts in this post binder constituting the customer's ledger. This saves still more work, and still more chance for making mistakes. As payments are made by customers the information with reference to such payments is posted from the cash receipt record to the carbon copy of the invoice just as if it were an ordinary ledger acount, and it will be desirable to transfer at the end of each month the carbon copies which show notations during the month of complete settlement. These sheets are transferred to another post binder, which is arranged alphabetically so that all of the accounts showing sales to any one person or firm are in the one place.

Purchase Records.

The purchases of a medium sized brick plant are comparatively few in number, the principal amounts being for lubricants and other plant operating supplies, fuel, and repair parts for machines. Reverting again to the day book, you will recall that I drew your attention to the fact that every transaction affecting the business was recorded in the day book. Along with the other items were the records of purchases. After the name and amount of the invoice was entered in the day book, the same entry was repeated in the journal, and the date and amount was posted to an account in the ledger. Accounting progress has supplied a much better way of handling these transactions. As soon as the invoice has been approved for price and for receipt of material, it is deirable to enter the invoice date, name of the creditor and the amount in a record which is ruled into a number of columns, the amount of each invoice being entered in the first column as a credit to accounts payable, the amount being repeated in some one of the columns across the page, which are properly headed up with accounts carried in the ledger, to which purchases are most frequently charged. This record takes the place of the entry of purchase items in the day book and also in the journal, and permits the posting of the amounts at the end of the month in monthly totals to the different accounts affected, instead of the items being posted one by one through the month. By making proper notation in a column saved for that purpose as to the date of payment or the check number by which paid, it is possible to eliminate the use of ledger accounts covering these purchases; that is, if you have purchased repair parts from the American Clay Machinery Company, it is not necessary to open an account in your ledger with this company, but enter the invoice in this purchase record, filing the invoice itself alphabetically in some kind of a vertical file where all of the invoices should be arranged according to the date, the most recent one on top for more convenient reference.

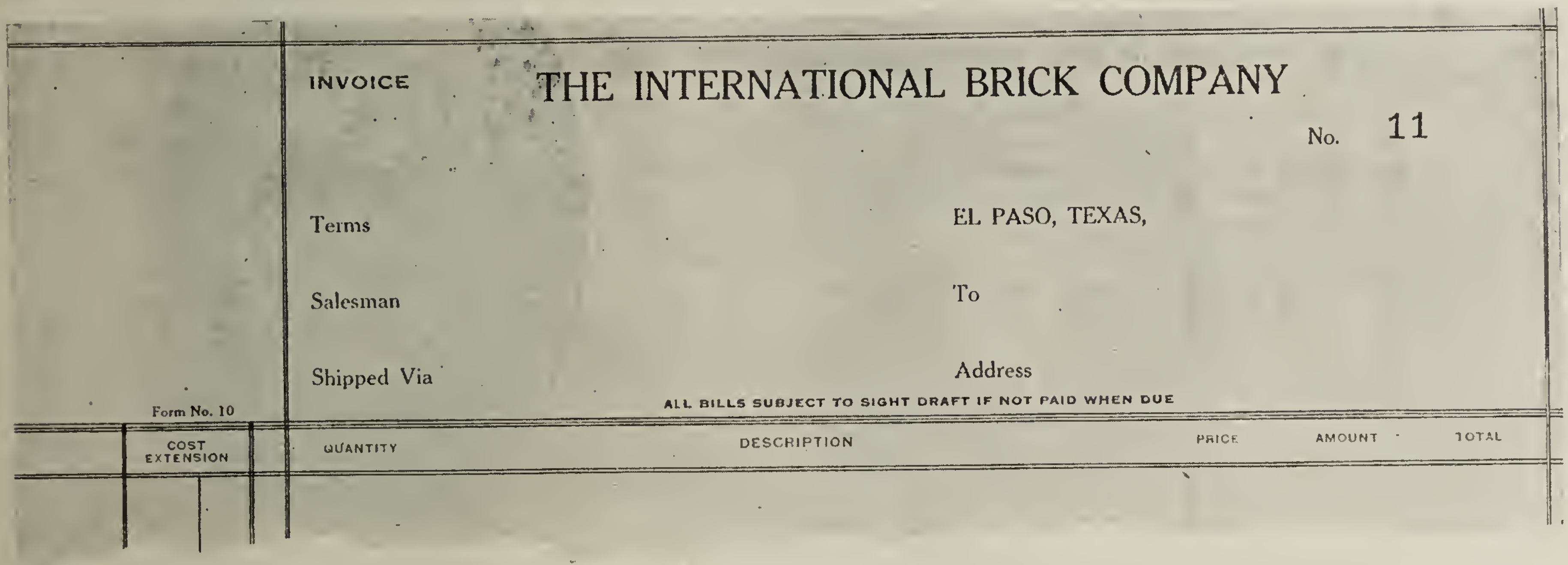
Ledger Accounts.

As I have already suggested, the ledger is not the book of original entry, but is the book which contains separate accounts covering each kind of transaction affecting the business. In any business there are two principal groups of accounts necessary to show completely the financial condition of the business at any one time, and the result of operating the business. These two groups of accounts include, first, assets and liabilities, and second revenues and expenses. You may have several accounts on your ledger representing revenue, and you should have, by all means, several accounts showing expense of manufacturing and selling your product. You will also have accounts showing the different kinds of assets; as, for instance, cost of real estate and plant, value of inventory, amount due from customers and cash on hand. You will also have accounts showing the different kinds of liabilities, as accounts payable and notes payable for borrowed money, the difference between the total of assets and the total of liabilities of the two kinds just mentioned being the net worth or the net assets belonging to the owners of the business. In case the business is owned by a corporation, these net assets show up on your books as so much capital stock outstanding and so much surplus and undivided profits. In making this statement, I am assuming that your plant has been operating at a profit, although I am reasonably certain that manufacturers of clay products have not been realizing in recent years their share of the increased earnings of industrial plants.

Summary.

I have not attempted in this talk to discuss methods of cost keeping. I realize that most American business men are so engrossed with the general management and upbuilding of their conconcerns that they have had little time to consider the information that should be provided for them from their books of account. It has been the usual case that such books as were kept were entrusted to some one who was satisfied to merely keep a correct mathematical record of transactions without any attempt to provide the information that should be produced. Most of you will admit, I believe, that if your bookkeeper produces for your inspection at the end of each month a so-called trial balance which seems to prove that everything is mathematically correct, you consider that the bookkeeper has done his full duty. I am not advocating the employment of outside accountants, but I do wish to leave with the small manufacturers one particular suggestion. Instead of trying to keep the accounts of your business in your spare time, unless you are particularly interested in studying accounting methods, look about you and find one of the bookkeepers in your town who seems more competent than most of them, and who has not yet gotten so deep in the rut of bookkeeping that he has stopped using his head, and see if you can obtain part of his time for keeping your accounts. In almost every community there is someone who is thoroughly trustworthy, and at the same time competent to do this work, which is important, but which is not enough in quantity to demand the services of an accountant for all of his time. I am quite certain that, if you are able to get such assistance, your accounts will come more nearly to showing you at the end of each month the financial condition of your business and the result of operating.

I wish in closing to express my appreciation of this opportunity of talking to you. I hope that I have conveyed to you the idea which is uppermost in my mind; that is, that there is nothing at all mysterious about the general principles which underlie accounting and that every one of you business men should have enough of a knowledge of accounts to make certain that your books are providing for you the information which you should have in the operation of your business. (Applause.)



INVOICE THE INTERNATIONAL BRICK COMPANY

No. 11

Terms

EL PASO, TEXAS,

Salesman

To

Shipped Via

Address

Form No. 10

ALL BILLS SUBJECT TO SIGHT DRAFT IF NOT PAID WHEN DUE

COST EXTENSION	QUANTITY	DESCRIPTION	PRICE	AMOUNT	TOTAL

Invoice Record to be Made in Duplicate.

President Clippert: I believe you are to discuss this paper Mr. Stevens.

Brickmakers' Accounts.

D. F. Stevens: It rather puts a man at a disadvantage to read another man's paper and then discuss it. I am sure we have all enjoyed this splendid paper on simplified methods of accounting. Of course you all noticed that the paper made very slight reference to cost accounting, and I appreciate the object in doing so was the fact that we have had so many splendid papers on that subject. All the bookkeeping methods are simple for the purpose of enabling us to get at and easily see the cost of doing business. I think we have all realized, especially during the past year, the very great profit of keeping correct costs, and keeping them down, or rather keeping on top of them. In the face brick business, we have had a time to keep on top of them. The methods Mr. Olive suggests are good and in keeping with the whole tendency of modern bookkeeping which is simplified, with the idea of cutting out all duplication and all use of duplicating outfits, of making out one form in any number of copies and then filling in these forms either in long hand or typewriter, with which you are running chances of error. I think the matter of cost accounting is even greater now than it has ever been, and great progress has been made along this line, especially the past year. The American Face Brick Association has been able to accomplish something in this matter. Over two years ago they started on the subject with an accounting committee, and engaged the services of a public accountant. After they had worked out a satisfactory system, they had this accountant visit every member of the Association and spend a day or two with each firm; I know the day he spent with us was very beneficial, and it was then obligatory upon every member of the Association to install this system. We did it on the first day of July last, and we have been delighted with the result. At first it seemed very complicated, it increased our ledger accounts 50 per cent., but after a short time we were delighted with it, and it takes us less time to handle with the new method. We work it ourselves. Of course this Association represents in its membership so many different lines, it would not be possible for any one system to be worked out under the same system, and the American Face Brick Association has found the system they are working under to be an extremely fine system. Other lines of manufacture would do well to follow along similar methods.

President Clippert: If there is no further discussion, the chair desires to announce on the committee to work with the National Board of Fire Underwriters:

W. E. Dunwody, Macon, Ga.
Jotham Post, East Williston, Long Island.
M. C. Viele, North Adams, Mass.

Of course, Secretary Randall is a member ex-officio of this committee.

President Clippert: What is the next, Mr. Secretary?

Secretary Randall: The next on the program is a paper on "The Essentials of Success in the Manufacture of Refractories" by Mr. C. D. Gregg. Mr. Gregg was put on the program at the request of one of our good members, but he has found it impossible to come. Mr. L. J. Brenner of Cannelton, Ind., was to have discussed this paper is here, and he may have something to say on this subject.

L. J. Brenner, Cannelton, Ind.: I have nothing to say, except to offer an apology for the secretary, instead of for me. I have not been in the business very long. I did not think there would be anything I could discuss in Mr. Gregg's paper that would be of interest to you gentlemen. In fact, I have not been in the business long enough to say anything very much, but one thing it brings to my mind in the year I have been in the business, I have been trying to gather a whole lot of information, and it reminds me of a little story about the Dutchman and the Irishman who got to arguing. The Irishman said, "What do you think about Bryan?" "He's all right." "What do you think about Taft?" "He's all right." "Who do you think has got the best show?" "Ringling Brothers." "Well, goodbye, Joe, come see me some time." "Where do you live?" "About six miles out from the town." "How do you get there?" "You take a street car, and go to the end of the line, and then you see a house with green shutters painted white. Well, that is not it. You go on to the next one and then you go on until you come to the cross roads where the blacksmith shop is that was moved away, and then you go on up the hill to where that place is where all the trees are that have been chopped down. " (Laughter.) That has been my fix for some time. This is my first visit to a N. B. M. A. convention, and it has been very profitable to me. I have been able to get practically all the information I wanted. I want to thank all of you. (Applause).

President Clippert: If the Committee on Resolutions is ready we will now have the report, Mr. Gregory is Chairman.

REPORT OF COMMITTEE ON RESOLUTIONS.

To the President and Gentlemen of the Convention:

Your committee on resolutions begs to submit the following report:

Be it resolved, That a Program Committee be appointed by the president to include members from the different branches of the clay industry, who shall meet with or confer with the president and secretary at least two months previous to the regular annual meeting of the Association, to arrange the program of the succeeding convention, and designate the subjects to be considered and the parties to present them, and be it further

Resolved, That the president and secretary, shall have the power to add to or change the program should occasion demand after the meeting or conference of said committee.

Whereas, The National Brick Manufacturers' Association is an educational association for advancing the mutual interest of clay manufacturers by discussions and exchange of experiences, therefore to more effectually carry out this policy,

BE IT RESOLVED, That the President be requested to appoint two committees; one on **Operating Efficiency**, whose duties shall be to investigate and present information in regard to improvements in methods and processes of manufacture and one on **Promotion and Publicity**, whose duties shall be to investigate and present opportunities for extension in the use of clay products and new or improved methods for increasing their use, by effective advertising and

BE IT FURTHER RESOLVED, That these committees shall cooperate with the Program Committee in presenting to the membership information which they have obtained.

Resolved, That the President of this Association appoint committees in different sections of the country to the end that a campaign be inaugurated to increase the membership of this Association with the object that every brick manufacturer in the United States and Canada may become a member of this Association.

Whereas, Since our last annual meeting Thomas B. McAvoy of Philadelphia, Pa., an ex-president of the Association, who was for many years a regular attendant at our annual meetings, has answered the final summons, as have also J. P. Stillwaugh, Toronto, Ontario; P. L. Simpson, Chicago, Ill.; C. G. Stevenson, Wellsville, Ohio, and Murrill Dobbins of Philadelphia, Pa., and

Whereas, In the death of these members, the Association has sustained an irreparable loss, therefore be it

Charles F. Clippert, Detroit, Mich.

Resolved, That this tribute be paid to their memory, and the sincerest sympathy of our entire membership be extended to the families of the deceased.

Whereas, The Secretary of Commerce, Hon. Wm. S. Redfield, Washington, D. C.; Governor James P. Goodrich, of Indiana; Mayor Chas. W. Jewett, of Indianapolis; Hon. Chas. A. Bookwalter and Hon. S. W. Stratton, Director of Bureau of Standards, and other distinguished guests have honored us with their presence and contributed largely to the success of this meeting, therefore

BE IT RESOLVED, That we tender to them our sincere thanks for the honor they have bestowed upon us.

Whereas, The manufacturers of brick and clayworking machinery of the State of Indiana and the editor of The Clay-Worker have entertained us so royally and provided so generously for our comfort and entertainment.

BE IT RESOLVED, That this Association extend to them and the management of the Claypool Hotel our thanks and appreciation for their hospitality.

BE IT RESOLVED, That the thanks of this Association be extended to the press of Indianapolis for their co-operation and interest in the work of the convention.

Respectfully submitted,
M. E. GREGORY, Chairman.
HOWARD H. STAFFORD.
DOUGLAS F. STEVENS.
T. J. NEISWANGER.
F. R. CARTER.
A. R. D. JOHNSON.
H. G. LOVE.
W. C. MITCHELL.
J. C. TAYLOR.

President Clippert: Perhaps it would be well to take up these resolutions one at a time. What is the pleasure of the convention?

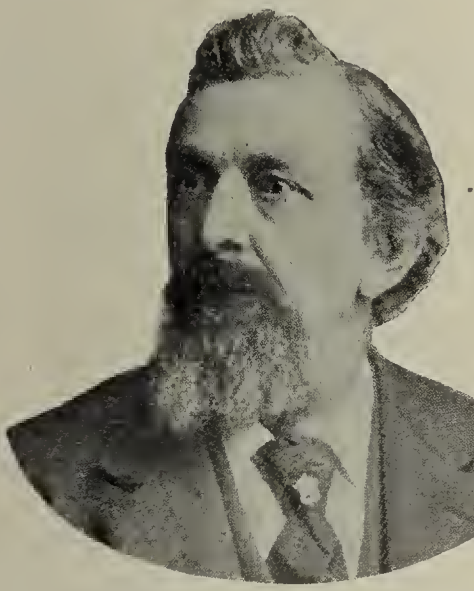
Mr. Hummert: If there are no objections, I move the adoption of the report as a whole.

Mr. Salmen: I second the motion.

Carried.

The Building Brick Bureau.

Secretary Randall: I want to bring to the attention of the members the work of the National Building Brick Bureau. It has not been idle, as some of you may suppose. Recently we have published a book for use by brick manufacturers in promoting the use of brick for low cost homes. It is the best publication of the sort that has ever been published. It contains twelve plans and views of twelve different types of houses, such as a corner house, double house, duplex and bungalows, etc. They are photos and sketches of real houses so that any prospective builder who should have this book and appear to be impressed with brick as a structural material and find in it a type of house he would like, could get the plans and specifications from the Building Brick Bureau. Architects have told me time and again they do not like to bother with little houses. They give them just as much trouble as a large house and they don't get anything out of it. This book placed in the hands of the architect will enable him to get the idea of what his client desires in the style of house. I think it will be immensely helpful to the brick manufacturer. The closing paragraph states specifically that the book is not antagonistic to architects, but is published with a view of helping them. The Building Brick Bureau can supply this book to brick manufacturers at a cost of less than fifty cents, depending on the number ordered. I do not think any manufacturer, especially in the rural districts, can spend $100 to better advantage than to invest it in these books and distribute them among his customers. It would be well for you people who want this book to give us sufficient orders so we may go ahead and get out another edition. We did not get out a very large edition because the Bureau did not have enough money right now. You can order in lots of fifty or one hundred, or a thousand, as you see fit. After adjournment, will be glad to have you look it over. We feel sure you will find the book very useful in promoting the use of brick, and you will also be helping the Bureau, and make it possible for us to take up work of another sort. The Building Brick Bureau will prove a decided help to the brick manufacturers of the country



John T. Hummert, Quincy, Ill.

C. P. Mayer: I would suggest that one page of that book be devoted to a statement giving the fire losses of the country so that builders may see the advantages of building with brick. I am in the lumber business, along with other lines. There is not a month I am not loaded down with pamphlets of various sorts. For instance, here is one of the head lines that came last, "Build now, and build with wood." That is all right for the lumberman, and for that reason it is really a benefit to me for the reason that it leads the public to build more fire traps and then they will have to buy more lumber. Now if a page in this book was devoted to showing the fire losses as an argument to the prospective builder at a time when his mind is open to suggestions in the kind of a house he is going to build, it would surely help.

President Clippert: Have we anything of that sort in the book, now, Mr. Randall?

Secretary Randall: No, not in this book. If a man goes into a lumber dealer's office and tells him he wants to build a $5,000 house, he will lay down before him plans and specifications and any carpenter can take these plans and build a house. So that it is what we are trying to do with this book. Lumber dealers are going into the sale of brick more and more, and if we can give them such a book as this it will help the thing along. I think such a page would be perfectly proper.

Mr. Eisenhart: Yesterday I would not have said one word in defense of Mr. Mayer because all the time he was talking he was trying to get on my toes. That book was gotten out for the benefit of brick manufacturers and to help the building of low cost houses of brick, and I think it entirely proper to have a page in it to show people the advantages of brick and its fire resistance qualities. Just how you are going to get that page in I don't know, for as I understand it, the book has been printed.

Secretary Randall: The first edition is out, but we can insert a page in the back, and in any subsequent edition it can be made a part of the book.

C. P. Mayer: Then I move such information be inserted in the book.

H. G. Love, Moose Jaw, Canada: I second the motion.

Carried.

President Clippert: The following queston has been handed in. "Is it advisable or desirable to draw the heat from continuous kilns and use it for other purposes?"

Mr. Hummert: I put that question in yesterday after I heard that discussion. You see I am one of those young fellows born in a sand box and haven't got the sand out of my eyes yet. I thought that it might prevent the advancement of heat from the other compartment. For instance, number one is cooling, but too hot to take the brick out today. Tomorrow you can take 20,000 brick out of that kiln you cannot touch today. Where does that heat go? It travels into the different compartments, from one to another. I have come to the conclusion that if we take any heat out of one of the compartments, you will defer the advancement of the other compartments. I want to ask Mr. Richardson, he is pretty well versed on this question. If number two would be affected in this case.

Mr. Richardson: I think it would be a good idea to keep at least three chambers back of the fire without a fan on it. We never go nearer than three chambers. You can take it off for water-smoking, but even then in finishing with the damper, if you want to get the bottom. Sometimes with the fan in the damper duct, it will check the draft, not perhaps the draft, but takes the air you need for the bottom of the kiln.

Mr. Hummert: I do not think it is best, for I think in the first place, the bottom gets cool two days before the top of the kiln. My men have taken brick out of the kiln when the pipes in their mouths have burned. Three or four course up they could not handle, but below they would handle all right. I want to tell a little experience we had. Perhaps some of you fellows will be in the same dilemma sometime. Number four was finished, number five, six and seven were under fire. All at once the fire would not advance any more. In fact, it drove back to number four. We examined the dampers, which were all right, but still the fire would not advance. What was the cause? There was a big crack in number four, and the heat went into that crack. My flues are on top of the kilns. I went and opened up number five, where the damper was and made a big hole in there, and the result was we found there was no draft in number four where the big crack was and we closed up that crack and the heat advanced.

Bids for 1919 Convention.

Secretary Randall: As usual, we have received numerous very cordial invitations or bids for our next convention from various important centers, including Buffalo, St. Louis, Richmond, Va., Cincinnati, Chicago, Toledo, and San Francisco. Springfield, Mass., extends a particularly urgent invitation and has followed up the written appeals by personal solicitations, sending two representatives here for the express purpose of impressing our Executive Committee with the many points of advantage which Springfield offers as a convention city. They can be assured that they will not be overlooked or forgotten when the matter of time and place for our next meeting is under consideration by the Executive Committee.

President Clippert: If there is no further discussion on this subject, we will now hear the report of the Committee on Standard Sizes, of which Mr. Stevens is chairman.

REPORT OF COMMITTEE ON STANDARD SIZES OF BRICK

Mr. Chairman: Your Committee on Standard Sizes of Brick recommend first, that the size of common brick be the same as face brick. At the recent conference between our War Service Committee and the United States Fuel Administration at Washington, the fact was brought out that the Government is very anxious for a standardization in every way possible to avoid the necessity of carrying special stock, special design, etc., in every line of business. In adopting the same size as the face brick, we would be following out the recommendation of the Government. In addition to this face brick and common brick are used in so many cases in bond with face brick.

In regard to paving brick, I made a misstatement yesterday. I talked with some paving brick men and thought a size had been adopted as standard, but I find it has not been settled.

We offer the following resolution:

RESOLVED: That the National Brick Manufacturers' Association recommend as standard the following sizes of brick; for average hardness of burn:

Common brick—8"x2¼"x3¾".

Face brick—8"x2¼"x3¾".

Paving brick—As determined by the National Paving Brick Manufacturers' Association.

Signed by the Committee:

DOUGLAS F. STEVENS.
B. H. RICHARDS, Jr.
G. B. LUCKETT.

I move the adoption of this resolution, Mr. President.

Mr. Richardson: I second the motion.

Carried.

Secretary Randall: We have reached the close of the program. I would suggest the Executive Committee get together immediately after adjournment. There are some things of vital interest for us to consider in order to lay our plans for the work ahead of us. There is a definite plan in mind to increase the membership of this Association which the Executive Committee will take up and will plan for even better work in the future than in the past. I can truthfully say I think this is one of the best conventions we have ever had, notwithstanding the fact that we meet here under great stress, so much so that many of our old time members were of the opinion that we had better not hold any convention at all this year. I am glad you came here and met with us, and glad your trip was worth while. I think I am one of the happiest men in the United States today because we have had such a splendid convention. We have met the spirit of the times in the patriotic features that have prevailed throughout the convention. I thank you all from the bottom of my heart for coming, and wish you all Godspeed on your journey home. (Applause).

President Clippert: Any member have anything further to bring before the convention for the benefit of the organization?

Douglas F. Stevens: I think it would be entirely proper before we adjourn in view of the fact that this is our honored Secretary's home city that some word be spread on the minutes for all he has done for this Association, and for the splendid work he has done for this convention, and I think it would also be in order to include in that, a word of appreciation for our Assistant Secretary for all the work she has done.

President Clippert: I think that needs no motion or second, I ask you all to rise in response to this suggestion.

Now before we close, I want to say a word. I want to thank you for electing me President of this Association, and for the splendid assistance you have given me through all the sessions. I am going to ask you to continue to give me the same support until we meet again. You will note the Committee on Resolutions has loaded the President up with some work, and in order to accomplish that work, I must have some assistance from each and every one of you. The chief thing we want to do is to increase the membership of this Association. It is a very easy matter to do this, and I am going to call on you from time to time. If we have a midsummer meeting, as I hope we will, we will want to get together and transact some business. I am going to be there if I am still alive, and I want to see as many of you as can, come and meet with us. In that way we will get away from the ridiculous criticism of this "one man organization that has got to be wiped out." The one way to do that is all get together and work together to the end that we may have a larger Association and do even better work than we have done in the past. I am going to expect you all to help. (Applause).

Douglas F. Stevens, Cayuga, Ind.

Secretary Randall: Just a moment before we close. A matter occurred yesterday of interest to all of our members. The Clay Machinery Manufacturers' organization which has been dormant for some years came to life, and Mr. George W. Keller, newly elected Chairman of the Executive Committee of that organization will tell you about it.

Machinery Manufacturers to Co-Operate with N. B. M. A.

George W. Keller, Philadelphia, Pa.: Mr. President and gentlemen, this will be very brief. When I went into the meeting of the Machinery Manufacturers' organization yesterday afternoon, I found I did not know the history of the organization, but I learned this, that six or seven years ago there were a number of trade papers in the clay field. The business was not large enough to warrant the publication of all of the papers, so the clay machinery manufacturers got together to defend themselves and settle this important matter. By that means the organization was brought about, and in time they accomplished that which they set out to do, eliminated all the trade papers but two, which the trade can readily support. So they thought their mission was at an end. We got together yesterday and determined there was something of a broader scope we could do. The machinery manufacturers are an integral part of the N. B. M. A. and of the work along all the lines. They are a part of the scheme of things. You make brick, you come to these conventions to talk about the best way to make brick; you also come to the convention and you depend upon the brick machinery manufacturer and their integrity to help you make brick better and cheaper. The one way to have harmony is to recognize each part. The machinery manufacturers are a part as well as the brick manufacturers. If they are to work together let's work them as strong as we can. Let's make the machinery manufacturers do something. We can work with you closer in everything you do, we want to make the conventions even a bigger success. We are going to say "Here, Mr. Machinery Manufacturer, we want you to support the Executive Committee, and its president and officers. We want you to give us the power to boost. We are going to advertise impartially in the Clay-Worker and the Brick and Clay Record of Chicago to boost the organization. If the convention is held in Indiana or Illinois, we will circularize every clayworker in Indiana or Illinois. If it is held in Ohio, it will be our duty to do the same thing in Ohio. We will do everything we can to aid in the work you have been doing. The machinery manufacturers at one time had rooms in which to entertain the men and that counteracted the influence of the discussions of the conventions. We will aid in that work exactly along the lines that you wish us to work. We are going to be big enough to have a room to entertain in and help along the good times we get at the banquets, and when the convention opens, that room will be closed up and the men will come into the convention sessions. These are some of the lines we are going to work along, and want you to realize that it will be our aim to help boost the N. B. M. A. We want you to grow and have more enthusiastic conventions and be all the more willing to come next year. I am chairman of the Executive Committee of the Machinery Manufacturers' Association and I want you and your officers to feel that we are doing our best to work with you, and you know now about the lines along which we expect to work. (Applause).

President Clippert: This is a very good finish to our convention. I know we all appreciate this action on the part of the Machinery Manufacturers. The convention now stands adjourned, subject to the call of the Executive Committee.

It was intended to give the banquet speeches in full in this issue, but to accommodate some of the speakers who wish to revise their toasts, we are obliged to defer same till a later number.

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CHAS. A. MILLAR, 56 Langley Ave	Toronto, Ont., Can.
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LEWIS M. TUTTLE, Tuttle Brick Co	Middletown, Conn.
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J. E. HOWARD, Interstate Commerce Com	Washington, D. C.
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GEORGE O. BERRY	Columbus, Ga.
A. H. SHEPHERD, Shepherd Brick Co	Columbus, Ga.
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CULLEN W. PARMELEE, Illinois State University	Urbana, Ill.
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W. J. SNYDER, Brazil Clay Co	Brazil, Ind.
LEO J. BRENNER, Cannelton Clay Prod. Co	Cannelton, Ind.
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GEORGE M. KRICK, Krick-Tyndall Co.............Decatur, Ind.
JOHN C. BOSS, John C. Boss & Co.................Elkhart, Ind.
H. C. KLEYMEYER, First Avenue B. & T. Co.....Evansville, Ind.
A. A. McCLAMROCK, The Wallace Mfg. Co........Frankfort, Ind.
A. G. GREGORY, Calumet Supply Co., 921 Broadway..Gary, Ind.
BROOKLYN BRICK CO., 506 Cham. of Com.....Indianapolis, Ind.
A. E. DAVIS, Western B. Co., Hume-Mansur Bld..Indianapolis, Ind.
C. A. PRITCHARD, Castle Hall Bldg...........Indianapolis, Ind.
STANDARD DRY KILN CO., 1547 McCarty St...Indianapolis, Ind.
A. B. MEYER, A. B. Meyer & Co..............Indianapolis, Ind.
NATIONAL DRY KILN CO.......................Indianapolis, Ind.
C. & A. POTTS & CO., 820 W. Washington St....Indianapolis, Ind.
J. E. RANDALL, T. A. Randall & Co............Indianapolis, Ind.
*THEO. A. RANDALL, T. A. Randall & Co......Indianapolis, Ind.
H. H. TITSWORTH, Clay Products Co..........Indianapolis, Ind.
G. M. RISACHER, Loogootee Face B. & T. Co....Loogootee, Ind.
MARION MACHINE FOUNDRY AND SUPPLY CO..Marion, Ind.
C. C. COLEMAN ,Adams Clay Products Co........Martinsville, Ind.
L. M. JOHNSON, Adams Clay Prod. Co..........Martinsville, Ind.
MONTEZUMA BRICK WORKS......................Montezuma, Ind.
G. S. BRUBAKER, H. Brewer & Co., 124 E. 5th St......Peru, Ind.
ARBUCKLE & CO..................................Rushville, Ind.
CHARLES F. HERMANN, U. S. Brick Co........Tell City, Ind.
J. M. HOSKINS, Terre Haute Vit. Brick Co......Terre Haute, Ind.
BOONE BRICK, TILE AND PAVING CO............Boone, Iowa
J. L BUCKLEY, Capital Clay Works...........Des Moines, Iowa
EAGLE IRON WORKS.............................Des Moines, Iowa
FLINT BRICK AND COAL CO.................Des Moines, Iowa
JNO. H. SLATER, The Grateless Furnace Co....Des Moines, Ia.
T. J. NEISWANDER...................................Harvey, Iowa
MASON CHILCOTE, Oskaloosa Vit. Brick Co......Oskaloosa, Iowa
D. F. MOREY, Ottumwa B. and Construction Co...Ottumwa, Iowa
C. C. CARHART, Sheffield Brick & Tile Co........Sheffield, Iowa
B. W. BALLOU, Kansas Buff B. and Mfg. Co......Buffville, Kans.
COFFEYVILLE VIT. BRICK AND TILE CO....Coffeyville, Kans.
ALEX R. BATLEY, 15 So. Little St.............Fort Scott, Kans.
J. M. BOGUE, 3-V Brick Co......................Neodesha, Kans.
H. M. GUY, Capital City Vit. Brick Co...........Topeka, Kans.
E. R. DILLEHAY.......................................Danville, Ky.
KLEYMEYER & KLUTEY B. AND T. Co........Henderson, Ky.
J. T. HOWINGTON, Coral Ridge Clay Prod. Co....Louisville, Ky.
J. CROW TAYLOR, 642 S. 40th St...............Louisville, Ky.
FRED W. ALHORN, Alhorn & Walker..........Morganfield, Ky.
A. LAGRANGE, Delatte & Lagrange..........Lake Charles, La.
R. B. FRIZZELL, Monroe Brick Co.....................Monroe, La.
H. J. SCHNEIDER, St. Joe Brick Works........Pearl River, La.
F. SALMEN, Salmen Brick and Lumber Co...........Slidell, La.
WILLIAM LUCAS, William Lucas.................Portland, Me.
BALTIMORE BRICK CO., 7 Clay St...............Baltimore, Md.
LEWIS N. RANCKE..............................Lonacoming, Md.
GEORGE M. FISKE, Fiske Brick Co., 25 Arch St..Boston, Mass.
JOHN W. HAHN, 166 Devonshire St............ ..Boston, Mass.
PARRY BRICK CO., 166 Devonshire St.............Boston, Mass.
THE SPIERS-FISH BRICK CO., 79 Milk St.......Boston, Mass.
E. L. COOK..................................Bridgewater, Mass.
SIDNEY H. FRANCIS, Fitchburg Brick Co......Fitchburg, Mass.
M. C. VIELE, North Adams Brick Co.........North Adams, Mass.
NORTHAMPTON BRICK CO...................Northampton, Mass.
R. A. BAILEY, Springfield Brick Co.............Springfield, Mass.
B. C. PIERCE, Presbrey Stove Lining Co........Taunton, Mass.
D. L. GILLETT, Westfield Clay Prod. Co........Westfield, Mass.
ROSS C. PURDY, Norton Co....................Worcester, Mass.
LEONARD J. & CHARLES E. SCHOLL...............Clio, Mich.
JAMES A. CANNON, The White Star Refining Co....Detroit, Mich.
C. F. CLIPPERT, George H. Clippert & Bro.......Detroit, Mich.
GEORGE H. CLIPPERT & BRO., 1960 Mich. Ave....Detroit, Mich.
H. F. CLIPPERT, George H. Clippert & Bro........Detroit, Mich.
WM. CLIPPERT BRICK MFG. .CO..................Detroit, Mich.
JOHN S. HAGGERTY, 1614 Dime Sav. Bk. Bldg.....Detroit, Mich.
C. J. McDONALD, McDonald C. & B. Co............Detroit, Mich
MERCIER, BRYAN, LARKIN BRICK CO..........Detroit,Mich
MOREHEAD MFG. CO................................Detroit, Mich.
THOMAS BROS., 712 Hamond Bldg..................Detroit, Mich.
WALKER & FRANK BRICK CO., 1254 Dix Ave......Detroit, Mich.
JAMES DAY, R. F. D. No. 1...............Saginaw, W. S., Mich.
JACKSON & CHURCH..............................Saginaw, Mich.
SAGINAW PAVING BRICK CO.....................Saginaw, Mich.
H. BREWER & CO..............................Tecumseh, Mich.
C. O. EVANS, Warren Brick and Tile Co..........Warren, Mich.
F. J. NIXON, Paine & Nixon..........................Duluth, Minn.
A. C. OCHS BRICK AND TILE CO.............Springfield, Minn.
WM. KOCH, Twin City B. Co.........................St. Paul, Minn.
J. T. BRAMLETT.......................................Enid, Miss.
W. S. DICKEY C. MFG. CO., N. Y. Life Bldg., Kansas City, Mo.
C. E. MYERS, The Pierce Co....................Kansas City, Mo.
A. P. GREEN FIRE BRICK CO.........................Mexico, Mo.
AMERICAN PULVERIZER CO.......................St. Louis, Mo.
H. C. BECKMANN, Progress Pressed Brick Co....St. Louis, Mo.
EVENS & HOWARD F. B. Co., 920 Market St......St. Louis, Mo.
W. P. GRATH, Illinois Supply and Construction Co..St. Louis, Mo.
HYDRAULIC PRESS B. CO., Cen. Natl. Bk. Bldg..St. Louis, Mo.
ANTHONY ITTNER, Ittner Brick Co.................St. Louis, Mo.
JULIUS J. KOCH, 3325 Carolina St..................St. Louis, Mo.
LACLEDE-CHRISTY CLAY P. CO.,Laclede Bldg...St. Louis, Mo.
LEMON PARKER, Parker-Russell Min. & Mfg. Co..St. Louis, Mo.
WALSH FIRE CLAY P. Co., Main & Angelica Sts..St. Louis, Mo.
M. F. WILLIAMS, 2707 N. Broadway...............St. Louis, Mo.
J. G. HAMMER, Butte Sewer Pipe and Tile Co......Butte, Mont.
MARTIN HALPIN.................................Fromberg, Mont.
W. H. GUNNIS, Anaconda Copper Min. Co.....Great Falls, Mont.
CHARLES H. BRAY...............................Helena, Mont.
JOHN GRETENCORT, LEWISTON B. & T. Co....Lewiston, Mont.
YANKEE HILL BRICK CO..........................Lincoln, Neb.
OMAHA CLAY WORKS...............................Omaha, Neb.
J. FRED SMITH, 22nd and Hickory Sts...........Omaha, Neb.
R. E. GOODRICH, W. S. Goodrich...................Epping, N. H.
W. S. GOODRICH......................................Epping, N. H.
ELTON BRADDOCK, Somers Brick Co........Atlantic City, N. J.
HUBERT SOMERS, Arctic & Missouri Ave..Atlantic City, N. J.
T. MONROE DOBBINS, Camden Pottery Co......Camden, N. J.
RICHARD E. SCHAEFER....................Mountain View, N. J.
CHARLES A. BLOOMFIELD, Bloomfield C. Co...Metuchen, N. J.
A. R. CAMPBELL, Box 95........................Metuchen, N. J.
A. S. REID, A. S. Reid & Co........................Newark, N. J.
GEORGE H. BROWN, Rutgers College.....New Brunswick, N. J.
GEORGE A. BALZ, Didier-March Co..........Perth Amboy, N. J.
ABEL HANSEN, Ford Porcelain Works.....Perth Amboy, N. J.
O. W. WILL, Roessler-Hasslacher Chem. Co..Perth Amboy, N. J.
W. H. H. ROGERS, Comptroller's Office..............Albany, N. Y.
C. F. BINNS, N. Y. School for Clayworkers..........Alfred, N. Y.
KUNO B. SCHOTTE, Henry C. Grime Co......Amsterdam, N. Y.
BROCKWAY BRICK CO............................Brockway, N. Y.
W. S. WILLIAMSON, United States Rubber Co....Brooklyn, N. Y.
HENRY BENDER, Bender Brick Co., 40 Jones St..Buffalo, N. Y.
J. H. BLACK, Builders' Exchange.................Buffalo, N. Y.
EDWIN F. KNIGHT, Buffalo Clay Products Co......Buffalo, N. Y.
W. J. LEARY, 407 Rhode Island St................Buffalo, N. Y.
JOHN E. SCHUESSLER, 678 Oak St...............Buffalo, N. Y.
GEORGE L. SCHMIDT, 180 Linwood Ave...........Buffalo, N. Y.
GEORGE W. SCHMIDT, 180 Linwood Ave..........Buffalo, N. Y.
CHAS. M. CROOK, Binghamton Brick Co.....Binghamton, N. Y.
M. E. GREGORY, Brick and Terra Cotta Co......Corning, N. Y.
JOTHAM POST........................East Williston, L. I., N. Y.
FRANK E. WILES, A. M. & W. H. Wiles Co..Grassy Point, N. Y.
R. G. EISENHART, Consolidated Brick Co......Horseheads, N. Y.
LEVI MARSHALL,JR., Consolidated Brick Co..Horseheads, N. Y.
A. M. COBBE, A. M. Cobbe Brick and Tile Co....Jamestown, N. Y.
HENRY B. LOVELAND, Ellicott Brick Co......Jewettville, N. Y.
C. P. HENDRICKS, 202 Washington Ave.....Kingston City, N. Y.
JAY TERRY, Terry Bros. Co.......................Kingston, N. Y.
R. A. MOORES, Duffney Brick Co.........Mechanicsville, N. Y.
H. J. JOVA, Jova Brick Works...................Newburgh, N. Y.
AMERICAN PROCESS CO., 68 Williams St......New York, N. Y.
CARRIER ENG. CORP., 39 Cortland St..........New York, N. Y.
C. W. CRANE, Crossman Co.........................New York, N. Y.
W. K. HAMMOND, 628 W. 52nd St..............New York, N. Y.
HAY-WALKER BRICK CO., 52 Vanderbilt Ave..New York, N. Y.
J. F. BOOREAM, Am. Tile Co., 1 Madison Ave...New York, N. Y.
FREDENSBURG & LOUNSBURY, 381 4th Ave...New York, N. Y.
W. MALSCH, Roessler-Hasslacher Chem. Co....New York, N. Y.
MILTON BRICK CO., 47 W. 34th St............New York, N. Y.
R. W. NEWCOMB, Engelhard Co., 30 Church St.New York, N. Y.
A. PETTIT, Chestnut Ridge White B. Co..........New York, N. Y.
PFOTENHAUER-NESBIT Co., 1133 Broadway..New York, N. Y.
PRUDDEN-WINSLOW Co., INC., 280 Madison..New York, N. Y.
J. A. RIDGWAY, Woolworth Bldg..............New York, N. Y.
F. L. SAMPLE, Kaolin Prod. Co., 120 Broadway..New York, N. Y.
W. H. TAYLOR, The New Jersey Co............New York, N. Y.
G. E. SLY, The American Architect...........New York, N. Y.
CHRISTOPHER STEADMAN, 50 Church St......New York, N. Y.
ALVA F. GLUCK, Frontier Brick Works....Niagara Falls, N. Y.
H. J. KNAPP, Central Clay Prod. Co....North Tonawanda, N. Y.
T. M. RYAN, Allegheny Valley Brick Co............Olean, N. Y.
H. G. WHITMORE, Rochester German B. & T. Co..Rochester, N. Y.
JOHN B. ROSE......................................Roseton, N. Y.
PHILIP GOLDRICK ....Saugerties, N. Y.
JOHN T. WASHBURN, JR......................Saugerties, N. Y.
B. J. CUMMINS, Cummins Brick and Tile Co......Syracuse, N. Y.
J. B. GERE, Onondaga Vitrified Brick Co.........Syracuse, N. Y.
FLOYD C. VAN ESELTINE, C. & L. Merrick....Syracuse, N. Y.
J. ADDISON CROWELL..............................Walkill, N. Y.
G. B. MENTZ, G. B. Mentz Co.......................Walkill, N. Y.
C. A. LANO, Borden B. & T. Co.................Goldsboro, N. C.
D. S. HILDEBRAND..............Brickton, Henderson Co., N. C.
E. A. POE....................................Fayetteville, N. C.
JOHNSON & JOHNSON CO.........................Raleigh, N. C.
J. C. STEELE & SON..............................Statesville, N. C.
RED RIVER VALLEY BRICK CO.............Grand Forks, N. C.
HEBRON FIRE AND PRESSED BRICK CO......Hebron, N. D.
THE ALLIANCE BRICK CO.........................Alliance, Ohio
ALLIANCE CLAY PRODUCT CO....................Alliance, Ohio
C. L .KENNEDY.............................Belle Center, Ohio
DAVIS BROWN, American Clay Machinery Co......Bucyrus, Ohio
W. R. CUNNINGHAM, American Clay Mach. Co....Bucyrus, Ohio
LAMBERT HAIGH, American Clay Mach. Co......Bucyrus, Ohio
H. HARMON, American Clay Mach. Co..............Bucyrus, Ohio
F. L. HOPLEY, American Clay Mach. Co..........Bucyrus, Ohio
CHARLES F. JONES, American Clay Mach. Co....Bucyrus, Ohio
W. H. MERKEL, American Clay Mach. Co........Bucyrus, Ohio
J. PRESTON PENFIELD, Am. Clay Mach. Co....Bucyrus, Ohio
HAROLD C. PENFIELD, Am. Clay Mach. Co......Bucyrus, Ohio
R. O. PERROTT, American Clay Machinery Co....Bucyrus, Ohio
C. B. SHARER, American Clay Machinery Co......Bucyrus. Ohio

THE BONNOT CO....................................Canton, Ohio
C. C. BLAIR, Metropolitan Pav. B. Co.................Canton, Ohio
DWIGHT E. HUMPHREYS, 707 Cleveland Ave......Canton, Ohio
METROPOLITON PAVING BRICK CO...............Canton, Ohio
A. A. OLDHAM, The Bonnot Co.....................Canton, Ohio
H. S. RENKERT, Metropolitan Paving Brick Co......Canton, Ohio
J. M. BLAIR, Blair Brick Co., Builders' Ex......Cincinnati, Ohio
W. B. KINCAID, Greenwood Bldg...............Cincinnati, Ohio
MITCHELL BRICK CO., Saylor Park Station....Cincinnati, Ohio
F. LAWSON MOORES, Moores-Coney Co.........Cincinnati, Ohio
J. B. STANWOOD, Houston, Stanwood & Gamble..Cincinnati, Ohio
JOHN M. STONER, Cincinnati Products Co......Cincinnati, Ohio
H. WEBSTER, Webster & Kincaid.................Cincinnati, Ohio
ATLAS CAR MFG. CO...........................Cleveland, Ohio
BARKWILL-FARR B. Co., Leader-News Bldg....Cleveland, Ohio
C. O. BARTLETT-SNOW CO......................Cleveland, Ohio
W. P. BLAIR, Natl. Pav. Brick Mfrs. Assn....Cleveland, Ohio
THE CLEVELAND BUILDERS' SUPPLY CO....Cleveland, Ohio
ROBERT J. DAWSON, Barkwill-Farr B. Co......Cleveland, Ohio
DOVER FIRE BRICK CO.........................Cleveland, Ohio
H. FORESTER, The Veritas Firing System Co..Cleveland, Ohio
WM. H. HUNT, Brotherhood Loco. Eng. Bldg..Cleveland, Ohio
E. W. KINGSBURY, Scandinavia Belting Co......Cleveland, Ohio
LAKEWOOD ENGINEERING CO...................Cleveland, Ohio
R. D. LANDRUM, Harshaw & Goodwin............Cleveland, Ohio
MEDAL PAVING BLOCK CO., Swetland Bldg..Cleveland, Ohio
SAWYER BELTING CO............................Cleveland, Ohio
CERAMIC SUP. AND CON. CO., 171 W. State St..Columbus, Ohio
S. M. CHASE, Chase Foundry & Machine Co......Columbus, Ohio
THE R. L. DOLLINGS CO........................Columbus, Ohio
C. B. HARROP, Ohio State University...........Columbus, Ohio
E. C. HOWARD, Claycraft Mining & Brick Co....Columbus, Ohio
THE IRONSIDES CO., The Wyandotte...........Columbus, Ohio
H. P. JENKS, Hook Patent Kiln Co..............Columbus, Ohio
ELLIS LOVEJOY, 414 Schultz Bldg..............Columbus, Ohio
D. E. REAGAN, Hocking Valley Prod. Co........Columbus, Ohio
W. D. RICHARDSON, Ceramic Sup. & Con. Co....Columbus, Ohio
R. T. STULL, 114 W. Tenth Ave.................Columbus, Ohio
F. B. DUNN, Dunn Wire-Cut-Lug Brick Co......Conneaut, Ohio
WM. C. PERKINS, Dunn Wire-Cut-Lug Brick Co..Conneaut, Ohio
R. W. SHARER.....................................Corning, Ohio
THE KELLER BRICK CO..................Cuyahoga Falls, Ohio
I. M. JUSTICE, Mfrs. Equipment Co..............Dayton, Ohio
MANUFACTURERS EQUIPMENT CO...............Dayton, Ohio
R. H. McELROY, International Clay Mach. Co........Dayton, Ohio
M. SILVERMAN, International Clay Mach. Co......Dayton, Ohio
HARRY WIRSCHING, The Standard Dry Kiln Co....Dayton, Ohio
BUCKEYE TRACTION DITCHER CO...............Findlay, Ohio
HANCOCK BRICK AND TILE CO...............Findlay, Ohio
E. M. FREESE & CO..................................Galion, Ohio
B. E. PLACE, E. M. Freese & Co.....................Galion, Ohio
E. J. MOORE, Richeson, Nelson & Moore..........Greenville, Ohio
THE HAMILTON BRICK CO.....................Hamtilton, Ohio
ROBERT L. FRINK, Frink Pyrometer Co..........Lancaster, Ohio
R. D. McMANIGAL......................................Logan, Ohio
W. I. FOSTER, Carter & Foster....................London, Ohio
THE THEW AUTOMATIC SHOVEL CO...........Lorain, Ohio
ED. FLANDERS, Marietta Shale Brick Co...........Marietta, Ohio
MARION STEAM SHOVEL CO.........................Marion, Ohio
J. L. MURPHY, Hocking Valley Brick Co.........Nelsonville, Ohio
ARNOLD-CREAGER CO. ....New London, Ohio
OHIO GALVANIZING AND MFG. CO.................Niles, Ohio
J. D. FATE CO.....................................Plymouth, Ohio
H. R. SYKES, The J. D. Fate Co....................Plymouth, Ohio
F. L. MANNING, Peebles Paving Brick Co......Portsmouth, Ohio
SHEPFER & MOOMAW BROS...................Sugar Creek, Ohio
W. A. HOWELL, Collingwood Brick Co..............Toledo, Ohio
A. R. KUHLMAN, The Ohio Brick Co.................Toledo, Ohio
TORONTO FIRE CLAY CO.........................Toronto, Ohio
BEN S. FISHER, Union Furnace Brick Co....Union Furnace, Ohio
J. E. WILTSHIRE, Ohio Kiln Co.......................Vigo, Ohio
THE WARREN BRICK & TILE CO...............Warren, Ohio
I. W. WOLCOTT, The Trumbull Clay Products Co....Warren, Ohio
R. C. BENNETT, Wellington Machine Co..........Wellington, Ohio
W. G. STEVENSON, The Stevenson Co............Wellsville,Ohio
C. G. STEVENSON, The Stevenson Co..........Wellsville, Ohio
J. C. KLINE, John Kline Brick Co..................Wickliffe, Ohio
H. B. CRUM, American Clay Machinery Co......Willoughby, Ohio
L. W. PENFIELD, American Clay Machinery Co.Willoughby, Ohio
J. A. PENFIELD, American Clay Machinery Co.Willoughby, Ohio
L. C. WILHOFF, Youngstown Steel Car Co....Youngstown, Ohio
THE BURTON-TOWNSEND CO..................Zanesville, Ohio
S. GEIJSBEEK, 603 Blake-McFall Bldg.............Portland, Ore.
D. T. RIFFLE, Allegheny Brick Co., Keenan Bldg....Allegheny, Pa.
OCHS & FREY BRICK CO.........................Allentown, Pa.
ENOS M. JONES, Altoona Brick Co...................Altoona, Pa.
H. V. CARSON, Keystone Driller Co..............Beaver Falls, Pa.
WILLIAMSGROVE BRICK CO...........................Bigler, Pa.
BLOOMSBURG BRICK CO.......................Bloomsburg, Pa.
W. W. SWENGEL.................................Bloomsburg, Pa.
G. W. FOSTER, Kittanning Clay Products Co........Bradford, Pa.
WM. HANLEY, Bradford Pressed Brick Co........Bradford, Pa.
WM. HANLEY, JR., Bradford Fireproofing Co......Bradford, Pa.
CHAS C. STRATTON, Alumina Shale Brick Co......Bradford, Pa.
C. P. MAYER BRICK CO..........................Bridgeville, Pa.
LEE B. HUMPHREYS, Humphreys B. & T. Co..Brookville, Pa.
W. C. MITCHELL, Cameron Clay Products Co.....Cameron, Pa.
W. F. SOISSON, Jos. Soisson Fire Brick Co......Connellsville, Pa.
D. WARREN DE ROSAY, Corry Brick and Tile Co....Corry, Pa.
C. K. WILLIAMS & CO...............................Easton, Pa.
MATHEWS GRAVITY CARRIER CO...........Elwood City, Pa.
HENRY SHENK, Dunn Brick Works........................Erie, Pa.
D. W. COX, Manchester Shale Brick Co............Harisburg, Pa.
W. H. BUNCE, Kane Brick Co...........................Kane, Pa.
G. W. McNees, Kittanning Clay Mfg. Co..........Kittanning, Pa.
J. A. BLAIR, Kushequa Brick Co...................Kushequa, Pa.
E. J. JAMES, Kushequa Brick Co..................Kushequa, Pa.
KUSHEQUA BRICK CO...........................Kushequa, Pa.
PAXTON BRICK CO.............................Middleburg, Pa.
H. B. SIMPSON, Monongahela Clay Mfg. Co....Monongahela, Pa.
P. A. SMITH, A. F. Smith & Co..............New Brighton, Pa.
BEAVER CLAY MFG. CO.......................New Galilee, Pa.
W. C. ALWINE, Alwine Bros..................New Oxford, Pa.
W. H. CARBAUGH............................New Oxford, Pa.
WALTER G. ROWLAND, Schuykill Valley Vit. Brick Co..Oaks, Pa.
GEORGE B. WAITE................................Parsons, Pa.
E. B. AYRES, Philadelphia Textile Mach. Co....Philadelphia, Pa.
CYRUS BORGNER, Cyrus Borgner Co............Philadelphia, Pa.
RICHARD P. BROWN, Brown Instrument Co....Philadelphia, Pa.
JOSEPH T. BYRNE, 29th and Clearfield Sts.....Philadelphia, Pa.
P. C. CARROLL, 60th and Haverford Sts......Philadelphia, Pa.
J. H. CHAMBERS, Chambers Bros. Co...........Philadelphia, Pa.
CONKLING-ARMSTRONG TERRA COTTA CO..Philadelphia, Pa.
WM. CONWAY, 58th and Walnut Sts.............Philadelphia, Pa.
S. B. DOBBS, 1218 Chestnut St................Philadelphia, Pa.
JOHN H. EARLEY, 2116 Tioga St...............Philadelphia, Pa.
ROBERT HAMILTON, Keystone Brick Co........Philadelphia, Pa.
O. W. KETCHAM, 24 S. Seventh St..............Philadelphia, Pa.
McAVOY VITRIFIED BRICK CO................Philadelphia, Pa.
A. S. REID, Morris Bldg.......................Philadelphia, Pa.
A. R. ROOT, Chambers Bros. Co., 441 S. 43d St..Philadelphia, Pa.
H. M. SINER, H. M. & C. B. Siner....Frankford, Philadelphia, Pa.
C. B. THWING, Thwing Instrument Co..........Philadelphia, Pa.
WEBSTER & KEYSER, 30th and Tasker Sts......Philadelphia, Pa.
THOMAS M. WILSON.............................Pittsburgh, Pa.
*A. V. BLEININGER, Bureau of Standards......Pittsburgh, Pa.
GRANT DIBERT, Iron City Brick & Stone Co....Pittsburgh, Pa.
E. W. DOW, E. M. Freese & Co., 3641 Liberty St...Pittsburgh, Pa.
FALLSTON FIRE CLAY CO......................Pittsburgh, Pa.
J. H. GLONINGER, 1507 Arrott Bldg..............Pittsburgh, Pa.
KITTANNING B. AND F. C. Co., Empire Bldg....Pittsburgh, Pa.
C. O. NORDENSSON, Huessener Eng Co.........Pittsburgh, Pa.
PHILLIPS & McLAREN, 24th and Smallman Sts...Pittsburgh, Pa.
PITTSBURGH BRICK CO., 715 Bessemer Bldg....Pittsburgh, Pa.
PITTSBURGH CLAY PROD. CO., Keenaw Bldg....Pittsburgh, Pa.
F. H. ROBINSON, 1205 Fulton Bldg..............Pittsburgh, Pa.
SANKEY BROS., 2212 Carson St...................Pittsburgh, Pa.
C. R. VAN ORMER, Pittsburgh Callery Brick Co....Pittsburgh, Pa.
CLYDE C. MURRAY, Reynoldsville Brick Co....Reynoldsville, Pa.
JOHN A. MILLER, Rochester Clay Products Co....Rochester, Pa.
V. WAGNER, Wagner Fire Brick Co..................Scranton, Pa.
STACEY E. TUTTLE, Shawmut Clay Mfg. Co......Shawmut, Pa.
ALFRED YATES ....Shawmut, Pa.
ELK FIRE BRICK CO...............................St. Marys, Pa.
HENRY T. WYNN, Wynn & Starr...................Trafford, Pa.
WATSONTOWN B. AND CLAY PROD. Co.....Watsontown, Pa.
GEORGE T. DICKOVER.........................Wilkes Barre, Pa.
WM. S. DICKOVER..............................Wilkes Barre, Pa.
D. STUEMPFLES SONS.........................Williamsport, Pa.
P. L. MONROE, 86 Weybossett St...............Providence, R. I.
IRVING A. RYTTENBERG, Sumter Brick Works....Sumter, S. C.
ROBERT TWELLS...........................Alton Park, Tenn.
R. C. GANGEWERE, Hogshead Apartments...Chattanooga, Tenn.
THEO. SIMPSON ....Columbia, Tenn.
KNOXVILLE BRICK CO.........................Knoxville, Tenn.
JOHN J. BISHOP, Tennessee Brick Co.............Memphis, Tenn.
W. G. BUSH & CO., 238 N. College St............Nashville, Tenn.
J. P. FULCHER & CO., Vanderbilt Bldg...........Nashville, Tenn.
C. H. COLEMAN, Athens Press Brick Co............Athens, Texas
FRASER BRICK CO., 810 Sumpter St.............Dallas, Texas
A. J. KAUTZ...Elgin, Texas
THE INTERNATIONAL BRICK CO.............El Paso, Texas
E. HEWITT RODGERS, El Paso Brick Co.........El Paso, Texas
W. W. STANIFORTH, Gainesville Brick Co.....Gainesville, Texas
JOHN B. CAHOON, Salt Lake Pressed Brick Co......Murray, Utah
RICHARD LEEK, Ashton Fire Brick & Tile Co...Ogden City, Utah
GEORGE H. TINGLEY.......................Salt Lake City, Utah
J. P. CAHOON, Salt Lake Press Brick Co.Salt Lake City, Utah
PARLEY N. DAVIS, 205 Kearns Bldg........Salt Lake City, Utah
E. J. RUTLAND, American Clay Machinery Co....Chilhowie, Va.
J. C. ROBINSON, Clay Products Corporation ....Hampton, Va.
F. W. DENNIS, 1052 Bermuda St...................Norfolk, Va.
C. C. HYATT, Richlands Brick Corporation........Richlands, Va.
J. H. DOYLE, Eureka Brick Co................Sturgeon Point, Va.
SALEM BRICK CO.................................Salem, Va.
H. L. JACOBS ....Suffolk, Va.
A. V. STURGEON....................................Suffolk, Va.
DENNY-RENTON COAL AND CLAY CO............Seattle, Wash
E. J. SHAW, 28 Pioneer Bldg.......................Seattle, Wash
D. B. POTTER, Thornton Fire Brick Co.......Clarksburg, W. Va.
NED P. ELZY..............................Parkersburg, W. Va.
MARION W. BLAIR, Thornton Fire Brick Co....Thornton, W. Va.
EXCELSIOR BRICK CO.............................Menomonie, Wis.
F. C. BOGK, Ricketson Mineral Paint Works....Milwaukee, Wis.
G. E. BURNHAM, Burnham Bros. Brick Co......Milwaukee, Wis.
GEORGE J. SCHWARZ..........................Milwaukee, Wis.
HENRY W. CARTER................................Oshkosh, Wis.
GUNTHER BROS......................Port Washington, Wis.
OSCAR ZIMBAL, A. Zimbel & Son.................Sheboygan, Wis.
G. A. MORRISON, Bucyrus Co............South Milwaukee, Wis.
CHAS. GALUSHA ....Casper, Wyo.
HERVEY HAIGH...............Slaithwaite, Huddersfield, England
J. L. VILLALTA...............................Barcelona, Spain

Dinner Party of the American Ceramic Society in the Riley Room, Claypool Hotel, Monday Evening, February 11th, 1918.

CONVENTION ECHOES

Appreciation From A. C. S. Member.

Dear Randall—I wish to thank you and the other members of the Indianapolis local committees for arranging one of the most pleasant and profitable conventions that it has been my fortune to attend.

The pleasant social affairs offered by the brickmakers to the Ceramic Society members did a great deal toward making the twentieth annual meeting of the Ceramic Society the success that it was. Sincerely, F. H. RIDDLE.

Pittsburgh, Pa., February 19, 1918.

Bright Future In Store For Ceramic Organizations.

My Dear Randall—Yours of February 21st at hand. I have had no opportunity before this to tell of my opinion of the successful convention which we had in your city the week of February 11. The American Ceramic Society should certainly feel proud of the attendance, the program and the work accomplished. I feel sure from the many comments made that all of the organizations which convened during that week are facing the future with considerable optimism and a surety of larger things for the ceramic industries, and indirectly for the asociation representing them.

I want to thank you personally for the effort you made to make everything pleasant, both for the organizations and for the individuals. We enjoyed your hospitality and hope that the time is not far distant when we can again be with you.

ROSS C. PURDY.

Worcester, Mass., February 25, 1918.

Hoosier Convention Successful.

Dear Mr. Randall—We wish to congratulate you and the local committee on the successful convention held at the Hoosier capital. The attendance at the convention was greater than we expected when the difficulties of reaching Indianapolis at this time are considered. We highly appreciate the hospitality we received while in Indianapolis. Wishing you success, we remain,

Yours very truly,
A. J. DUNN,
Sales Manager, The Chase Foundry & Mfg. Co.

Columbus, Ohio, February 23, 1918.

Considers The Convention Best Yet.

Dear Mr. Randall—I take this opportunity to write you in regard to the Indianapolis convention which we thoroughly enjoyed during our entire stay and think that the Entertainment Committee did themselves proud in taking care of the outside people. It occured to me that the entertainment was probably the best that had ever been given to visiting members, a number of the papers were superior to what any convention had had and on the whole I think you can feel very proud of the success of the 1918 convention. With kindest regards to yourself and the office force, I am,

Yours very truly,
J. W. ROBB.

Clinton, Ind., February 26, 1918.

Missed But One Convention in Twenty-Seven.

Dear Mr. Secretary—Our trip to Indianapolis was a most enjoyable one. To spend a week with our many good friends at such a splendid hotel like the Claypool is a real treat. As already stated, on the floor of the last convention at Indianapolis, 27 years ago I was initiated, and missed but one convention during all those years. To many of the good old faithful members, (God bless them all), and to the information obtained from year to year by attending the sessions, I learned enough to continue at one and the same place 28 years, and if what I accomplished can be termed a successful career, to the N. B. M. A. is entitled the credit of getting me started and continue working along proper lines, notwithstanding some fool writer would undertake to discredit the work done by the N. B. M. A. Nothing but a selfish motive would induce any man to undertake to be a knocker of that kind.

Business continues good, and notwithstanding we had to face zero weather, we lost no time since January 1, only the few days ordered by Uncle Sam. Kind regards to all the Randalls. Yours truly,

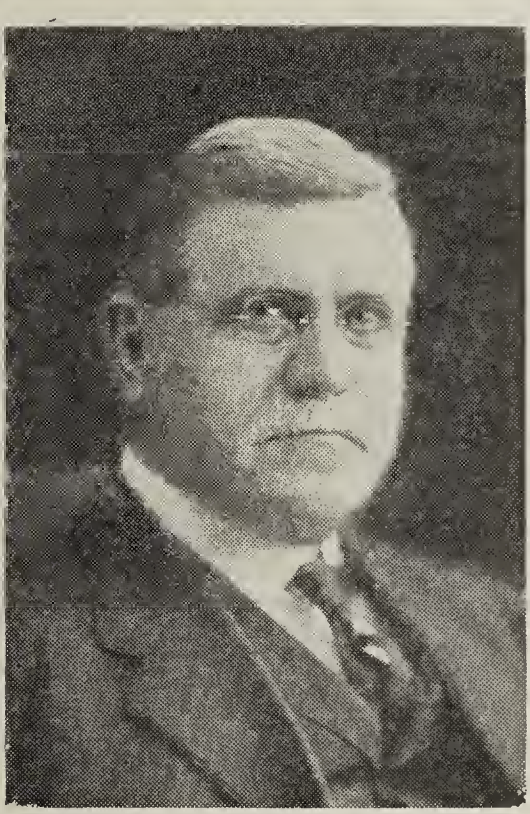
R. G. EISENHART.

Horseheads, N. Y., February 26, 1918.

An Eventful Meeting.

My Dear Randall—I was obliged to rush away in the midst of the Thursday evening banquet of the N. B. M. A. while Secretary Redfield was speaking, in order to meet with the Highway Industries Organization in Washington.

This is an organization recently formed, which embraces all interested in the improvement of highways so that there may be transferred from the railroads all tonnage offered for transportation which the railroads are unable to haul, in the early realization of which the disappointments and inconvenience which we all suffer, due to a lack of transportation, may be removed.



Ex-president, Will P. Blair, Cleveland, Ohio.

But the N. B. M. A. meeting itself as a whole and in its every part, typified in a most satisfactory way the highest and best of the industry. The congeniality of everybody attending and the harmonious procedure marked in a most noticeable way this eventful meeting in these eventful times.

Very truly yours,
WILL P. BLAIR, Secretary,
National Paving Brick Mfrs. Assn.

Cleveland, Ohio, February 23, 1918.

Every Brick and Tile Manufacturer Should Join N. B. M. A.

Dear Randall—I arrived home safe and feeling much better and more optomistic since my return from the old Hoosier Convention.

The Indianapolis convention will be recorded in my memory as one of the most pleasant and profitable conventions which I have had the pleasure of attending in a number of years.

I regard the housing legislation bill now before congress as one of the most vital and important before the house, and think that every clay manufacturer, both large and small should use his utmost influence in seeing that this bill goes through, favorable for one of the most durable and economical building materials of this day and age, namely, "Burnt Clay Products," and the only practical way to secure favorable legislation is for every brick and tile manufacturer in the U. S. to become a member of the N. B. M. A. and all pull together.

Trusting that I may have the pleasure of attending the next National Convention, even though there is a possibility of it being held in Berlin, I beg to remain,

Yours very truly,
W. C. MITCHELL.
Cameron, Pa., February 27, 1918.

Optimistic for Future of N. B. M. A.

Dear Randall:

I stopped off at Pittsburgh on my way home from the convention and spent a day with my son Creveling. Arrived home Sunday evening and left the next day for New York, and am back home once more, and find your letter of recent date. Yes, I hope we can live up to the spirit of the Indianapolis convention, and build up an even stronger and more effective organization. While we all know we have accomplished a lot in the past, yet we must always look to greater things in the future, and I myself think the prospects for the Association look very good.

With kindest regards to you all, I remain,

Yours very truly,
M. E. GREGORY.
Corning, N. Y.

Enjoyed Convention Week.

Dear Theo.:

Well, I arrived home O. K., about three hours late, which was not so bad these times. I want to tell you I spent a very enjoyable week in Indianapolis with you and yours and the convention folks. You are a great "fixer," Teddy, and when you get things in your home town you certainly cannot be beaten. Found things at the yard about as when I left. We are not running, but are sending out about 100,000 brick per day to Uncle Sam, which reduces our stock pile. As soon as we can get our men together again we will start up, for while coal is not exactly plentiful as yet, it is commencing to come in, and we will take a chance. As you probably know the house for the shipyard workers is assured here in Philadelphia, and this will help the brick industry, as about 2,000 houses will be built, calling for something like 40,000,000 brick. Enclosed find check for the order I gave you for the book "Types of Modern Brick Houses." Hope you can send them without delay. Kind regards to you all.

As ever,
Philadelphia. WILLIAM CONWAY.

Thanks to the Local Committee.

Dear Friend Randall:

Mrs. Post and I arrived in New York Sunday evening only about three hours late, which was doing pretty well, all things considered. We stopped at the good old McAlpin Hotel over night and reached home Monday. We sure did have a good time at Indianapolis; thanks to you and the local committee, and I hope you will convey our thanks to the Indianapolis people. I am shipping out quite a lot of brick for use on the big Government aviation field not far from here, and the indications are, will make a big shipment every week for some time to come.

Sincerely yours,
Glen Head, Long Island. JOTHAM POST.

Convention Sessions Well Attended.

Dear Mr. Secretary:

While the Indianapolis convention was the third I have attended, I must say it was the most successful of the three, in my opinion at least, as the sessions were much better attended than they usually are. You certainly deserve a good deal of credit for the splendid success of the convention.

Yours very truly,
Tell City, Ind., March 1 CHARLES F. HERMANN.

Banquet Best He Ever Attended.

Dear Mr. Randall:

The writer was very much pleased with the N. B. M. A. meeting, and I think the banquet was one of the best I have ever attended. The speakers, from the toastmaster down, were first class in every way and your local committee certainly deserves commendation.

Yours very truly,
C. C. BLAIR, Vice-President,
The Metropolitan Paving Brick Co.
Canton, Ohio.

Major Orton Pleased With Association Message.

WAR DEPARTMENT
Office of the Quartermaster General of the Army.
Washington, February 17, 1918.

My Dear Randall:

Your kind and thoughtful message received and pleased me greatly. I am delighted to know that the N. B. M. A. meetings were a great success. I shall look forward to the convention report this year with more than usual interest, inasmuch as I was not there to have personal knowledge of it. I never realized before that the convention report is for the fellow who doesn't attend.

I have no news yet from the A. C. S. beyond a pleasant greeting from the boys, sent Monday night at their Section Q. I hope things went well and that good constructive policies prevailed and that factionalism was obliterated. We'll never get anywhere by the continuation of the debates of this year and I hope they will now settle down and get to work.

With kind regards, Yours truly,
(Signed) EDWARD ORTON, JR.

Good Fellowship Prevailed.

Friend Randall:

I appreciate very much your thoughtfulness in sending me the photo of Secretary Redfield, together with one fine looking gentleman from Indiana, and another guy who fills in, in a pinch.

I was very sorry that I could not have stayed at the convention longer than I did, but the work on the Exemption Board is taking up a great deal of my time, and my son was preparing to leave for service, which put more burden upon me at the brickyard. I don't believe anyone can realize the sacrifices that are being made by some homes in this country, unless they have passed through a like experience.

In regard to the convention, I wish to impress upon you my very high appreciation of the way you conducted it in your own home town; especially was I well pleased with the sentiment and good fellowship that prevailed throughout the whole meeting. I have attended every convention since my membership in our organization, but never was I so thoroughly satisfied and convinced that our organization should be allowed to continue as it has, with old friends meeting from year to year, renewing old friendships and making new friends, which goes to bind the tie that holds us together.

The spirit of patriotism that prevailed throughout the whole meeting was much to my liking. The papers that were read were of high class, and those that did not avail themselves of the opportunity of hearing them missed one of the best parts of the convention.

I am not aware of anyone within the scope of my acquaintances with the brick manufacturers, who would change the spirit of the convention, as it now exists. Nevertheless, there may be some whom I am not personally acquainted with that have in them the spirit that if they cannot rule the organization they would ruin it. If there are any such within the precincts of the clay industry, I would say to them, it would be far better if they would go ahead and mingle with us as friends, allowing us to conduct this organization to the best interest of all clay industries in the United States and Canada.

With sincere wishes, I am,

Fraternally yours,

Detroit, Mich., February 27 C. H. BRYAN.

Convention Far Above the Standard.

Friend Randall:

Since our return from Indianapolis, my wife and I have talked several evenings about the happenings at the convention. We feel we had the best time at Indianapolis of any convention we have attended so far. Particularly did we enjoy the social features. I think much good will come from the deliberations of the convention. If the things started at Indianapolis can be carried out, the N. B. M. A. will be able to do even better work than it has done, for we will be able to increase the membership and usefulness of the organization.

I am elated over the fact that the clay machinery manufacturers are going to take active part with us in boosting the Association. As a whole, I think the convention was for above the standard.

With well wishes for the N. B. M. A., yourself and family, I am, Sincerely,

Bridgeville, Pa. C. P. MAYER.

Entertainment Features Much Enjoyed.

Dear Mr. Randall:

Want to tell you that we enjoyed all the features of the N. B. M. A. convention. Of course, we were a little disappointed that the attendance was not larger, but realize that it was as good as could have been expected, considering the times. We surely appreciated the entertainment features provided by the local committee and feel they are entitled to the hearty thanks of all those in attendance for the efforts exerted to look after their visitors.

Yours very truly,

H. R. SYKES,

Plymouth, Ohio. Sec. and Treas. The J. D. Fate Co.

Convention Profitable From a Business Standpoint.

Dear Mr. Randall:

I am enclosing check in payment of the bill for the sign, and want to take this opportunity of thanking you for your attention in having this sign ready for us, and for the many other attentions during the convention. From a business standpoint, the convention was to me a most profitable one. It was also an enjoyable convention; thanks to the Entertainment Committee, who certainly did excel themselves on this occasion. I wish to convey to them my thanks and appreciation.

Yours very truly,

Kankakee, Ill. HAROLD COPPING.

Clay Machinery Men to Boost Next Year's Convention.

Secretary, N. B. M. A.:

The Clay Machinery Manufacturers' Association plans to work even closer than ever before with the N. B. M. A. for a rousing convention in 1919.

At a very enthusiastic meeting of the association it has been decided to institute a most aggressive advertising and publicity policy to boost next year's convention in every possible way.

In analyzing the future work of the Clay Machinery Manufacturers' Association, it has been kept in mind that the success of any convention depends primarily upon the brick manufacturer. It is a fact, however, that the new developments in brickmaking machinery materially assist a brickmaker in meeting competition and making money. The clay machinery men, therefore, are a factor in the brick man's success. They are a part of the general scheme of brick manufacturing as much as the brickmaker himself or the sales office through which the brick is sold. It is, therefore, of advantage at these conventions to have every brick manufacturer here. It is also to the advantage of these brick men to have a full representation of machinery men. When these two elements in the clay industry work hand in hand, they will develop one of the strongest national associations that it is possible to organize. It is only practical, however, when you have complete harmony and full co-operation that the best results are obtained.

The clay machinery men have pledged themselves one and all to the sole support of a strong aggressive movement that will undoubtedly make its impression felt on the convention this coming year. They have the hearty co-operation of every trade paper and the house organs of all the big machinery men. They are going about this matter in a businesslike way and will use every ounce of the power behind this organization to get results which will show up in fine form at the next national convention.

The plans of the Clay Machinery Manufacturers' Association may be briefly outlined as follows:

First, they propose to circularize every brickmaker in the state where the convention is to be held at least three months before said convention to make known the big advantages to the individual brick man in attending these meetings. Second, they will carry advertising in the brickmakers' journals, pointing out the advantages of the conventions. Third, they will advertise in such papers as "Dependable Highways" to arouse the full round of interest in the brick industry. Fourth, subject to the approval of the Clay Machinery Manufacturers, it is proposed to have a large convention room, where both the manufacturers and brick men can come in on social terms at the brick convention and get better acquainted. This puts apart the idea of buttonholing a man and bringing him into a clay machinery man's exhibition rooms for business purposes. It is, however, deemed best that this room be closed during the convention meetings, as we believe that the greatest value can be derived by attending all executive sessions and by the enthusiasm which a large crowd always means.

You have back of the Clay Machinery Manufacturers' Association a list of officers representing some of the oldest members of the organization. Nothing will be done that will not first be given very careful consideration, and will be based on the experience of years with the workings of the association. The officers elected for the coming year are as follows:

Mr. John C. Boss, president, John C. Boss Co., Elkhart, Ind.

Mr. L. W. Penfield, vice-president, American Clay Machinery Co., Bucyrus, Ohio.

Mr. Thomas A. Hibbins, secretary and treasurer, The Stevenson Co., Wellsville, Ohio.

Mr. G. W. Keller, chairman executive committee, The Brown Instrument Co., Philadelphia, Pa.

Mr. F. L. Hopley ,executive committee, American Clay Machinery Co., Bucyrus, Ohio.

Mr. Thomas A. Hibbins, executive committee, The Stevenson Co., Wellsville, Ohio.

GEORGE W. KELLER,
Chairman Executive Committee.

FACTS AS TO THE RECENT CONFERENCE WITH THE U. S. FUEL ADMINISTRATION AT WASHINGTON

THE PRESIDENT AND SECRETARY of the N. B. M. A. have been criticized for not attending a conference of clayworkers with the U. S. Fuel Administration at Washington, D. C., February 20. We give below a copy of the Secretary's letter to Mr. P. B. Noyes, of the Fuel Administration, under date of February 16. The telegraphic advice asked for in same was not received. The letter is self-explanatory, and the reader may judge for himself as to the sincerity of the critics.

Indianapolis, February 16, 1918.

P. B. Noyes,
U. S. Fuel Administration,
Washington, D. C.

Dear Sir:

I am back at my desk after nearly a week's absence in attendance at our Thirty-second Annual Convention. Though held here in our home city, it required my exclusive attention until today.

Your letter of the 13th is before me. You say, "When we arrive at a date to call you, as representative of the Brick Manufacturers' Association, will write you." Am I to infer from this that you would prefer to have me come to see you later on instead of the 19th or 20th, when the representatives of the Face Brick Association are to have another conference with you?

A letter from Secretary Hollowell, of that Association, names those dates and mentions Mr. Schlake, Mr. Griffiss and myself among those expected to be in attendance. The two gentlemen named were our representatives at the conference January 18 and 19, and I expect they will be at the conference the 19th and 20th, unless advised that the representatives of the common building brick interests are to have a separate conference at a later date.

If you will kindly wire me at my expense on receipt of this, as to your preference in the matter, and give me any further instruction which circumstances require, I will be duly grateful and will endeavor to meet same promptly.

Our convention, though not largely attended (there being little more than 400 present), was exceptionally enthusiastic. The prevailing spirit was that of patriotism, which found expression in the following resolution:

"Resolved, That the National Brick Manufacturers' Association, while in convention assembled, pledges its loyalty to the Government and offers its full support to the President in this trying time in our national life."

The convention also unanimously adopted a resolution relative to our co-operation with your department, as follows:

"Resolved, That we endorse and commend the work done by our Secretary at Washington, in the interest of this Association, before the U. S. Fuel Administration; and be it further

"Resolved, That our President and Secretary continue to represent the interests at Washington, and that our President be further empowered to call in such other members, who are not already represented by some allied association ,to act on the committee, as he may see fit and the occasion demands."

I have recently received hundreds of letters from manufacturers of common building brick, who are not members of our Association, authorizing me to represent the writers at any further conferences. A typical letter is that of the Hope Brick Works, Hope, Ark. It is brief and to the point, as follows:

"Herewith authority to represent us before Mr. Noyes on the fuel situation. Do the best you can, but remember we must win the war, and also that the Hope Brick Works will be glad indeed to do anything possible to help—shut down altogether, run half time, quarter time, after crops are laid by, or just any way that will be helpful."

Their annual capacity is 6,000,000 brick, which are burned with gas mostly. A small amount of coal is used for some portions of the work.

I have letters from manufacturers in the Eastern and Central States, stating that from 40 to 60 per cent. of their output during 1917 was used in government buildings, or for buildings in which munitions and other materials for the Government were to be made. I mention this, as to my mind it is an indication of the importance of building brick as a war material. Of this, more anon.

Awaiting your reply, I am,

Most respectfully,
(Signed) T. A. RANDALL,
Secretary N. B. M. A.

BRICK NEWS FROM SOUTHERN INDIANA.

THE BRICK MANUFACTURERS in cities and towns in southern Indiana say that trade has shown some improvement during the past month and that in their opinion it is going to continue to get better with the coming of milder weather. During the severe winter weather there was little doing among the brick manufacturers of southern Indiana and, in fact, most of the plants were closed down. The severe weather, car shortage, labor shortage and other things operated against the trade. Things are different now and there is a better feeling pervading the trade. Building operations are picking up some. In the city of Evansville the building operations for the month of February showed a gain of nearly $4,000 over the corresponding month of last year. Brick manufacturers and contractors say that while they do not look for as much building this year as is generally done in peace and normal times, they expect to keep fairly busy. An addition of ten rooms will be built to the Claremont school at Evansville and the plans for the building are being drawn. The estimated cost of the building, which will be constructed of brick, has not yet been made public. Evansville architects are also drawing plans for a new high school building at Lynnville, Ind., that will cost in the neighborhood of $40,000. It will be constructed of pressed brick with stone trimmings. A grade school building that will cost $12,000, will be built in Center township, Vanderburg county, near Evansville, the structure to be built of brick. Plans have been drawn for a new high school building at Carmi, Ill., a few miles west of Evansville, that will cost $40,000. The building will be constructed of brick with stone trimmings. Plans have been drawn for the new plant of the Schmadel Packing Co., at Evansville, the building to cost in the neighborhood of $40,000. Plans will be drawn soon for a new parsonage at the Methodist Episcopal church at Hazleton, Ind., thirty-three miles north of Evansville. A new Methodist Episcopal church that will cost about $16,000, will be built this summer at Bicknell, Ind. There has been considerable building at Bicknell during the past two years and indications point to a great deal of building being done there this season. So taken as a whole the outlook is not bad for the brick manufacturers of southern Indiana. Things look a whole lot better than they did a few months ago.

Southern Indiana brick manufacturers have been notified that the Baptist church at Somerset, Ky., that was recently destroyed by fire, will be rebuilt this summer. The new church will be constructed of brick and will cost about $40,000.

The Huntingburg Pressed Brick Works, at Huntington, Ind., a few days ago made a shipment of 85,000 brick to Jeffersonville, Ind., to be used in the building of the United States

Quartermaster's Depot. This company has been extremely busy for some time past and their products have been shipped to various parts of the country. The company is one of the best known in southern Indiana.

The sewer pipe plant at Cannelton, Ind., was closed down several days recently while Frank Paulin and helpers erected two large smoke stacks at the plant. The Cannelton sewer pipe factory is one of the leading industrial plants in that thriving city on the Ohio river.

Brick manufacturers in southern Indiana, who have taken a leading part in all patriotic moves in that section since the United States got into the great world war, will be active in the Third Liberty Loan Campaign that will start in April. Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Machinery Co., will serve on important committees in Evansville and they will do their "bit" in the great drive. Messrs. Kleymeyer and Andres are among the most public spirited and patriotic men in Evansville and they are always at the front in any move that has for its purpose the betterment of their city, state or country at large.

Evansville will build several miles of improved streets during the coming summer and some of the streets will be constructed of brick, the best material known for this purpose. Many of the brick streets in Evansville were put down more than twenty years ago and are still in a fine state of preservation and are good for many more years to come.

The Standard Brick Manufacturing Co., at Evansville, Ind., has landed several nice jobs of late and according to Secretary Andres, the company will get its share of the business during the coming season. Their several plants are running on better time than they were two months ago.

Kleymeyer and Klutey, brick manufacturers at Henderson, Ky., twelve miles south of Evansville, Ind., have been busy of late and they have several good jobs in sight for the coming summer. This is one of the best known concerns in northern and western Kentucky.

The war has taken away a good many of the men who had been employed at the various brick yards and tile factories in southern Indiana, but thus far these industries have not been seriously crippled. It is believed, however, that before next fall the various plants will feel the loss of their men.

A HOOSIER.

COMPLETING BRICK HIGHWAY AT COST OF ABOUT $500,000.

"Columbiana county, Ohio, claims credit for the longest continuous stretch of permanent improvement on the Lincoln Highway to be completed for the current year," says the Lincoln Highway Magazine.

"Twenty-seven miles of the famous road across the country are being surfaced with brick at a total cost of one-half million dollars in round figures.

"The completion of this work will forever eliminate one of the worst stretches of Lincoln Highway in the Buckeye State. The road in Columbiana county, which adjoins the Pennsylvania-Ohio line, has long been considered a black spot in the otherwise acceptable conditions of the road in Ohio. Efforts tending towards the elimination of this condition have been carried on by the Lincoln Highway Association practically ever since the original routing of the highway through the state.

"Although other improvements are being made in each of the states traversed by the Lincoln Highway on the route from coast to coast, the work in Columbiana county surpasses all other endeavors in the extent of practical permanent construction."

CURRENT NEWS NOTES.

James Shaw, secretary of the Canonsburg (Pa.) Pottery Co., has been elected president of the Shaw Pottery Co., a newly organized concern which has purchased the plant of the Morris China Co., of Trenton, N. J. Mr. Shaw will retain his interest in the Canonsburg Pottery Co.

Richard Ward, of Wilkes-Barre, Pa., has been appointed manager of the Wilkes-Barre and Hazelton Brick Co., of Hazelton, Pa., operating a number of plants in that section.

In the building material line the market for Hudson river brick holds very firm in tone, as there are practically no supplies available locally outside of the hands of retailers. There is some inquiry in evidence, however, but no one can tell when navigation will open, although it generally starts March 10 to 20. A great deal depends this year upon the amount of coal available for the plants. Prices continue to be quoted at $10 per thousand.

A FINE BIT OF TRADE LITERATURE.

An attractive booklet has been issued by the Ball Engine Co., Erie, Pa., entitled "What the Erie Is Doing." The cover is very unusual, being a lithographed reproduction of a bank of tough blue shale that the Erie shovel dug without blasting, embellished with a fine halftone cut of the Erie at work on road excavation. The booklet contains a half-hundred photographic views of the Erie shovel operating in various ways, thus illustrating the universal character of the Erie, proving the claim that the Erie can be used anywhere in any way for either light or heavy service excavation work. We reproduce a miniature of the cover, which is really a work of art. A copy of the booklet can be had for the asking. Address Ball Engine Co., Erie, Pa. See ad on page 235.

The F. Graham-Williams Brick Co., with offices in the Candler Building, Atlanta, Ga., reports business as unusually brisk for this time of year, and it feels greatly encouraged over the outlook for the coming season.

Work has been started on the immense new plant of the Smith Brick and Tile Co. at Sheffield, Iowa. The factory is to be the last word, as it were, in the way of a modern clay-working plant. The construction will be in charge of Claude Smith, who has been manager of the American Brick and Tile Co. at Mason City for a number of years. C. L. Smith, who is at the head of the new concern, is also interested in the Mason City plant.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
226 East Ohio St. T, A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. March 12, 1918. No. 2a.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

1918 is making history and a new national spirit.

* * *

A good machinery salesman is a splendid gloom dispeller.

* * *

The stay-at-homes missed something good this year, as usual.

* * *

Counsel and co-operation are things among the needs of the day which the N. B. M. A. helps to supply.

* * *

While the thirty-second N. B. M. A. convention was not the biggest in point of attendance, it was one of the greatest in quality and benefits derived.

* * *

Never in the history of the industry have so many men carried around with them pictures of their sons. Of course, these are pictures of sons in uniform. And everywhere that a group was gathered together and the talk drifted to the war, there was a showing of pictures and a comparing of notes, followed by a pledging of co-operation and energy on the part of all those who have one or more from among them in the ranks.

* * *

It ought to be a good year for building silos, and there ought to be more of them built of burned clay.

* * *

The man with the hoe will have his place in the sun this summer as well as the man with the gun.

* * *

If foreign freight must wait for ships, let's unload it and release the cars, for they are needed to keep the domestic trade moving.

* * *

There was a lot of "gasing" about producer gas kilns, and it was well worth listening to—with masks off—for it leads the way to fuel economy.

* * *

If you escaped that American Ceramic Society membership committee you were unlucky, for if you are a clayworker you should get in with this live wire gang.

* * *

There was never a convention where the machinery contingent had more interesting things to show the clayworker than were on tap at the Indianapolis gathering.

* * *

As the imperative needs for good roads become more apparent the outlook for paving brick brightens, for the best roads, like the best streets, are those that are brick paved.

* * *

We read a lot about the Russian mind, the Russian attitude and what it is the peasants want these days, and it is all about as clear as mud, and as easy to understand as the Russian language.

* * *

Knowledge and control of burning temperatures is a factor in clayworking that is coming in now for long-deserved attention. It helps toward efficiency as well as better and more uniform quality.

* * *

While we are fighting for liberty we are also being impressed as never before with interdependence of both people and nations upon each other. Plainly it is time for a congress of nations.

BRICK AND TILE VALUES.

Revision of cost figures and the making of new prices has been the order of the day in every branch of industry, and nowhere is this more needed than in the clayworking industry. Brick prices have always been among the last to advance, and both brick and tile manufacturers must now recognize the need for a general readjustment of values, or wake up some day with a check-up for balances and find they are losing money instead of making a profit. Practically every item entering into the manufacture of clay products has doubled in cost, and the costs of today must be carefully computed in figuring the selling price, not the cost of last year and year before. Everywhere, there is need for a getting together of the trade on this matter.

THE PRICE OF MACHINERY.

The price of machinery and supplies stands at a higher level than it used to, or the dollar is smaller than it used to be, whichever way you care to look at it. It is not the purpose here to argue this point, but rather to argue against the too prevalent idea that the clayworkers should put off the buying of needed supplies and equipment because the prices are higher compared to pre-war times. The need for machinery and equipment has increased more than the price. Labor is not only higher, but it is difficult to obtain, consequently machinery of the labor-saving class is imperative to help solve the manufacturing problems of the day. The fact that it costs more adds to the amount necessary to invest, but it does not offer an argument against buying. In fact, the need to buy equipment to keep up-to-date is more important today than ever before. The price is only one factor of many, and in this case, too, a minor factor. It is the needs of the day that we should look after and the price of neglecting these will likely be higher than the price of machinery.

THE TESTING OF MEN.

Men of America are being tested now and their metal is being proven in various ways. We are all being tested one way and another in the mills of Mars, the war god. Some are getting the test amid the firing of guns and the bursting of shells, while others are being tested by the fire of adversity, of readjustment of industrial, political and business conditions to the changed aspect of the world. Some are cracking under it, some are showing a yellow streak, some are developing one weakness and some another, and most all of those who fail to stand the test will be marked and remembered. Those who stand the test at the present time and show firmly some good color will have proven their metal and will become better and stronger men with a deeper rooted and broader spirit of patriotism than ever was known in this country before. The war will bring its compensations as well as its disasters, and not the least of these will be in the proving and testing of men so that we can separate the good from the bad.

WAR GARDENS.

The food problem continues with us, and the need both to conserve food and to increase production is too readily apparent to need emphasizing by elaboration. It is not enough, however, to recognize these needs. It is needful that all of us help a little in some way, and most of us can help enlarge upon the gardening idea. The family garden and a little truck patch may appear insignificant, and puny efforts at solving the food problem in relation to the main cereals, but just the same they do contribute, because the aggregate of small gardens makes up an imposing total of foodstuff for our needs. Moreover, home canning and home storage did much to help out the past winter, and can be made to do even more in another year. It is the plain duty, therefore, of every brick man to encourage all those associated with him to grow gardens at home. Then, there is around every brick plant some idle land that can be used for gardens and truck patches, and some special effort should be made to utilize all of this that is practical in the growing of something that will help solve the food problem for the immediate community.

THE MACHINERY REPORTS.

The machinery and supply men make varying reports of business with them, and on the whole these reports are fairly satisfactory. The busiest lines of machinery are those needed in the making of fire brick and refractories and in the making of drain tile. Next comes the general demand for labor-saving equipment and for fuel-saving devices and appliances for determining and regulating kiln temperature. The urgent needs of the times have stimulated some extra demand in these lines, which in a measure offsets the laxity which might exist because of the comparatively poor outlook in building operations. So, taking it all together, the machinery trade reports indicate a fair volume of business, with prospects of it improving as the season advances. Also, it is to be noted that the machinery salesmen are a persistent and optimistic lot of fellows, who do much to help bring cheer to the gloomy spots, and in offering new ideas and suggestions that are worth while to the clayworking industry as well as stimulating for the machinery business.

THE FARMER'S BILLIONS.

The Department of Agriculture has estimated that the value of farm products in the United States during 1917 reached the unprecedented total of $19,443,849,000. This was an increase of more than six billion over the values of 1916, and almost nine billion over those of 1915, both of which were fairly good years in the agricultural lines.

The estimate shows a total crop value of $13,610,463,000, representing 70 per cent. of all farm products for the year, and $5,833,386,000 as the value of animals and animal products of the farm. These values represent the value at the farm, not the value to the final consumer, which is greater yet.

The one impressive thing about these billions of the farmer, that is his having more billions of money than ever before, is that surely the farmer is in good position both to buy and install tile drainage and to build new brick homes and other buildings. He has the money, and he has received enough price for his product that there is no excuse for hesitancy about paying the modest price which should be charged him for clay products.

THE CASH IDEA.

Never in the history of business in this country has there been such a widespread disposition toward putting business on what is termed a cash basis. The cash idea is not only a dominant idea, but in many instances it is dominating trade to the point of leading it astray.

Not only is the corner grocery man imbued with the cash idea and talking of selling for cash, and asking people to carry their goods home, but there is appended to it the suggestion of charging one cent a week for each dollar of credit, which is almost enough to arouse the envy of a loan shark.

The one sound bit of logic in all of it is this: Cash is worth something, and to extend credit costs something. The extending of credit is a form of service which has done more to build up trade than any other one single service rendered by merchants and manufacturers. It is a service, too, which has not always been charged for as it should. Now there is a disposition to go to extremes and even charge exorbitant prices for this service, or eliminate it entirely.

The cash idea is a good one if handled thoughtfully and sensibly, but if handled rashly it may prove a boomerang. After all, discounts and interests are the things which help solve the cash and credit problem, and there is room to figure them out on a rational basis which will be fair to all concerned. That is the way to figure them out; other ways are uncertain and will in the end prove unsatisfactory.

THE BUSINESS MAN'S BIT.

Every loyal business man naturally wants to do his bit to help further the success of our military operations and the main question involved in this connection is that of how each man may best do his little bit. Somehow one is impressed by the doings and incidents of life all around with the idea that perhaps too much time and thought of business men and their families is centered upon doing something directly either for the comfort of our boys or for co-operation with the military authorities. There is need for some direct action of this kind, but there is also a need for us to keep in mind the importance of what might be termed the indirect assistance. It is just as essential to keep the industries of the country well organized and on a stable basis as it is to keep the boys under the colors supplied with the necessaries and the comforts of life. Therefore, it would seem that one good place for the business man to concentrate more attention is in the planning and executing of business tactics so that business may thrive and supply the needs of the occasion and pay the bills that are being incurred. The man who is helping keep business going the way it should be and to protect and maintain the industries of the country is doing his bit just as well as those who are going to the front, and the sooner we realize this fact and act upon it the better it will be generally. There has naturally been some confusion and much thought and energy following directly after our sentiment and patriotism, but now let us turn to and eliminate the confusion and stimulate business enterprise all around to the end that we may be victorious in prosperity and industrial up-building as well as in our military undertakings.

CO-OPERATIVE LEAGUE OF BUILDING TRADES AND INDUSTRIES, CHICAGO.

The building trade of Chicago, which has been practically paralyzed since the beginning of the war, has formed itself into an organization to be known as the Co-operative League of Building Trades and Industries. It is composed of employers and employes, and its object is to secure for Chicago the establishment of war industries and erection of warehouses to provide work for idle contractors, masons, carpenters, painters and other building trade craftsmen. The temporary officers of the league are: President, Thomas Carey, president Carey Brick Co.; vice-president, Simon O'Donnell, president Building Trades Council; secretary, L. D. Binyon, president Kimball Brick Co.; treasurer, Charles Gindele, contractor. President Carey was appointed chairman of an executive committee, which is to have plenary power to co-operate with the Government in the promotion of war industries in Chicago.

AN IMPROVED SOOT BLOWER FOR WATER TUBE BOILERS.

For a number of years past, the Marion Machine, Foundry and Supply Co., of Marion, Ind., has supplied the trade with soot blowers for cleaning tubular boilers. They have recently taken over the entire business of the Planet Steam Specialty Co. and have secured the services of the secretary of that company, the inventor of the device, who will take charge of that branch of the engineering department of the M. M. F. & S. Co., which is now better than ever equipped to meet the demands of the trade for soot blowers needed for cleaning boilers of any type or description. They solicit correspondence from readers of The Clay-Worker desiring a device of this type which insures boiler efficiency and fuel economy. The Marion Machine, Foundry & Supply Company also manufactures a line of machinery for pulverizing and mixing clays, shale, etc., see ad on page 364, or better, write them for illustrated leaflet.

THE NATIONAL BUILDING SUPPLY ASSOCIATION CALLS CHARLES T. HARRIS.

Charles T. Harris, formerly in the executive office of the Ohio Building Supply Association, Cleveland, Ohio, has just been appointed secretary of the National Builders' Supply Association by W. A. Fay, of that city, recently elected president of that organization. Headquarters of the national association will be located at 1334 Schofield Building. Mr. Harris has specialized in association work for the last fourteen years. He is an ardent believer in co-operation and recently delivered talks to the Ohio Building and Supply Association at Columbus and later to the Indiana Building Supply Association at Indianapolis upon Co-operation in the Supply Business. "Cleveland Co-operates," the slogan adopted by the Cleveland Secretaries' Association, was suggested by Mr. Harris. Previous to taking up association work, Mr. Harris was general sales manager of Fiske & Co., New York City, manufacturers of tapestry brick, and for many years before being associated with the Fiske company was general manager of the Celadon Roofing Tile Co.

Table of Contents

N. B. M. A. Official Report..245
The Opening Prayer........245
Mayor Jewett's Welcome Address 245
Response of Mr. Gregory...248
President Salmen's Annual Address 248
Treasurer Sibley's Report...249
Election of Officers.........250
Installation of Officers......252
Report of Committee on Technical Investigation...254
Report of War Service Committee 255
The Duty of the Hour......256
Committee on Resolutions...257
Benefits of Social Co-operation in the Brick Business.258
Co-operation in Brick Business 258
Co-ordination of the Brick Business 260
Waste in the Clay Industry..260
Fuel and Labor Saving.....262
Brickmaking the Hoosier Way 263
Sizes of Brick.............264
Report of the Co-operative Brick Pier Investigation..265
A Yankee Common Building Brick Plant..............272
Brickmaking in Louisiana...274
Burning Brick with Producer Gas in Indiana...........276
Art in Brick and Landscape Work 277
Approves Idea of Keeping N. B. M. A. an Educational Organization 281
The Kiln Floor.............282
Essentials in Kiln Construction 282
The Nation's Fire Waste....283
Shingle Roofs Should Be Penalized 285
Building of Frame Houses Should Be Discouraged...286
Simplified Accounting for Brick Manufacturers......286
Brickmakers' Accounts......289
Report of Committee on Resolutions 290
The Building Brick Bureau..291
Bids for 1919 Convention...292
Report of Committee on Standard Sizes of Brick..292
Machinery Manufacturers Cooperate with N. B. M. A..292
Members National Brick Manufacturers' Ass'n.....293
Facts as to the Recent Conference with the U. S. Fuel Administration 300
Completing Brick Highway at Cost of $500,000.......301
National Building Supply Association Calls Charles T. Harris 352
Co-operative League of the Building Trades and Industries 352

CORRESPONDENCE:

Convention Echoes..........297
Appreciation from A. C. S. Member 297
Bright Future for Ceramic Organizations 297
Hoosier Convention Successful 297
Considers the Convention the Best Yet.................297
Missed but One Convention in Twenty-seven..........297
An Eventful Meeting.......297
Every Brick and Tile Man Should Join N. B. M. A...297
Optimistic for Future of N. B. M. A...................298
Enjoyed Convention Week..298
Thanks to the Local Committee 298
Convention Sessions Well Attended 298
Banquet Best He Ever Attended 298
Major Orton Pleased with Association Message......298
Good Fellowship Prevailed..298
Convention Far Above the Standard 299
Entertainment Features Much Enjoyed............299
Convention Profitable from Business Standpoint......299
Clay Machinery Men to Boost Next Convention.........299
With Cincinnati Brickmakers 357
San Francisco and Vicinity..360
Brick News from Southern Indiana 300

EDITORIAL:

Current Comment..........350
Brick and Tile Values......350
The Price of Machinery....350
The Testing of Men........351
War Gardens..............351
The Machinery Reports.....351
The Farmers' Billions......351
The Cash Idea.............351
The Business Man's Bit....351
Editorial Notes and Clippings 362

MISCELLANY:

A Fine Bit of Trade Literature 301
The Home Builder..........357
Better Roads for Southern Indiana 360
An Improved Soot Blower for Water Tube Boilers......352

INDEX TO ADVERTISEMENTS ON PAGE 364.

DRAIN TILE WORK IN MINNESOTA.

The proposition of the Minnesota Reclamation League is a broad one, and comprehensive enough to be effective. Drain tile men see a valuable ally to their interest in its plan for statewide drainage. Only by comprehensive drainage work can anything really worth while be accomplished. And if work is laid out on a reasonable plan for continuity it will make an immense market for drain tile. And unless something of the kind is done there will be a distinct setback to drainage. So far there has been too much drainage which merely hastened the water off the particular section of ground sought to be drained, but with no particular attention as to where the water was to go. It was sent into a natural stream and from that point out Providence had to care for it. This has resulted in overflowed lands, in suits and agitation against drainage, which may take years to adjust, and will ever be a source of expense and irritation. Yet drainage is greatly needed. Some of the richest agricultural lands anywhere merely await thorough drainage to add thousands of acres of food-producing soil to cultivation. So a number of the drain tile concerns of Minnesota have been co-operating with the League in its work.

Written for The Clay-Worker.

WITH CINCINNATI BRICKMAKERS.

A LITTLE spring-like weather has had the effect of making the brick industry look up a bit, though there has been little, if any, real life to the trade. The people are just looking and seeking to find out what it will cost to build. However, this indicates a healthy attitude, and that gives promise of at least an awakening. The prospects, therefore, are that the spring will find at least a fair demand, but there is nothing akin to a normal business counted on for at least a time.

Of course there is an active movement to keep the matter in mind, and the interested parties are not letting their business drift along without some effort to make it a "go," but the results have been only nominal. The building reports for the month of February do not look very healthy, and the number of permits and amount of building in dollars are below the same month a year ago. The number of permits issued was 681, representing $249,700, while last year the same month showed 872 permits for building operations valued at $841,490. However, according to Building Commissioner Rendigs, there is no reason for any discouraging reports. The decrease has been noted in new work, and a larger share of consideration is being given to seeing that the work done is in line with the building code.

A plan has been gotten under way to arouse a wider interest in the Ohio river as a means for transportation, and this project is to be given a great deal of publicity in the future. A meeting is to be held here on March 20, under the auspices of the Ohio River Improvement Association, at which it is expected there will be a large number of delegates from the cities along the Ohio river, and it is to be given a wider scope as to the possibilities in this way for shipping. As there is much in the way of clay products that can and should be shipped via the river route, this should find a ready and welcome approval on the part of those interested in this industry. A considerable amount of coal has lately been shipped in this way, and there is an opportunity of making it a source of much profit in the future.

The annual meeting of the Builders' Exchange is to be held here on March 13, when a board of directors and an executive board will be elected. There are two tickets, and the election should be a lively one. Some new members have been recently received into the Exchange, and a feeling of optimism is noted in the organization. The building outlook is very fair, as noted by Business Manager David Burnet, and he is confident of a much better demand with the arrival of warm weather.

While there is a better demand for common brick, the plants are not believed to have begun operations as yet. The freight embargoes and the other drawbacks are not helpful at this time, and the indications appear to be that the matter will go somewhat slower this spring. There have been too many obstacles in the way of operation to make the topic easy, and the future is just a little unsettled as yet.

The sale of the plant of the defunct Anders Shale Brick Co. will take place on the 28th of March.

Donnelly Weaver, secretary of the Brick Sales Co., who had his automobile stolen from in front of his office in the St. Paul Building several months ago, has found it after a long search. It was sold in Dayton, Ohio, and later sold to a party in Cynthiana, Ky. The alleged thief was arrested on complaint of Mr. Weaver.

C. C. and E. A. Weber, architects, recently took bids on the building of an addition to a hotel at Charleston, W. Va., to be erected of brick and stone, of three and four stories high. Also awarded contracts on a school building to be erected at Lebanon, Ky., to cost $40,000, to be of brick and stone construction.

Several of the brick men who reside in Kentucky, but who have their offices here, came into the limelight recently in a show that was given at the Methodist Church at Latonia, Ky., on March 4 and 5. It was "Ye District Skewl of Long Ago." Arthur Riggs, president, and Donnelly Weaver, secretary of the Brick Sales Co., took prominent parts, as well as Charles D. Alton, of the Purcell-Grand Co.

A new building is to be erected at 527-529 Main street, to be three stories high, to cost about $40,000.

The Builders' Supply Co. says there has been a larger call for common brick of late and that the number of inquiries gives promise of a very much better demand for face brick, according to the way that inquiries are coming in now. There is nothing out of the ordinary, but the prospects are better.

The Cincinnati Clay Products and Manufacturing Co. feels more hopeful, too, and notes a larger promise by the way the people are getting about asking for information as to brick.

The report at the National Sales Co. is not very hopeful. Orders are plentiful, but the fact that the freight embargoes are still holding good has been one of the serious handicaps that has worked a hardship on the shipping end.

The prospects for business are fair with the Cincinnati Clay Co., though there is not as much vim to the demand as there should be now. Sewer pipe and other clay special lines are moving fairly well, but fire brick are on the jump. There is very little to note these days that has anything akin to real hustle with the exception of fire clay and brick.

CINCY.

THE HOME BUILDER.

Quite a lot is going to be said through trade papers covering various branches of the building material industry during the present year about the home builder. The primary purpose is to encourage a renewal of building activities, which in turn will mean a direct benefit to the industries represented. Also the Clay-Worker among others expects to have its say and take part in helping promote home building. In this, however, there are secondary motives which, as often happens, are of first rather than secondary importance. To quite an extent the inspiration and argument for home building and for building better homes comes from a belief that more homes and better homes mean a more substantial nation of people.

It is the home builders who are the main stay of the nation, and where there are good homes and home surroundings they naturally make for more good and greatness in the people growing up in and around them.

There is a quotation going the rounds now from a noted sociologist who has said: "Give every family a home with lawn and trees and flowers in the front, and a garden in the rear, and crime will disappear in two generations."

One of the things that we may give credit for the greatness of our country at the present time is the fact that it is the best housed nation in the world. There are many faults can be found, many conditions that need improving, but even so, we have, broadly speaking, the best homes to be found in the world and more people have good homes.

We might take pride and satisfaction in this fact and stop there, but it is not the habit of this country to stop. We are a progressive people and the basis of our national growth should be progress and home building. So we want to keep the home building spirit alive, not simply because the building of better homes on the ideal plan with the ideal material means more business for the brick and clay products people, but because in the end it means a great benefit also to the people who do the building.

And There Are Others.

Scribbles—Jingles tells me he is something of a poet.

Dribbles—Yes, that's right. He writes boomerang poetry.

Scribbles—What kind of poetry is that?

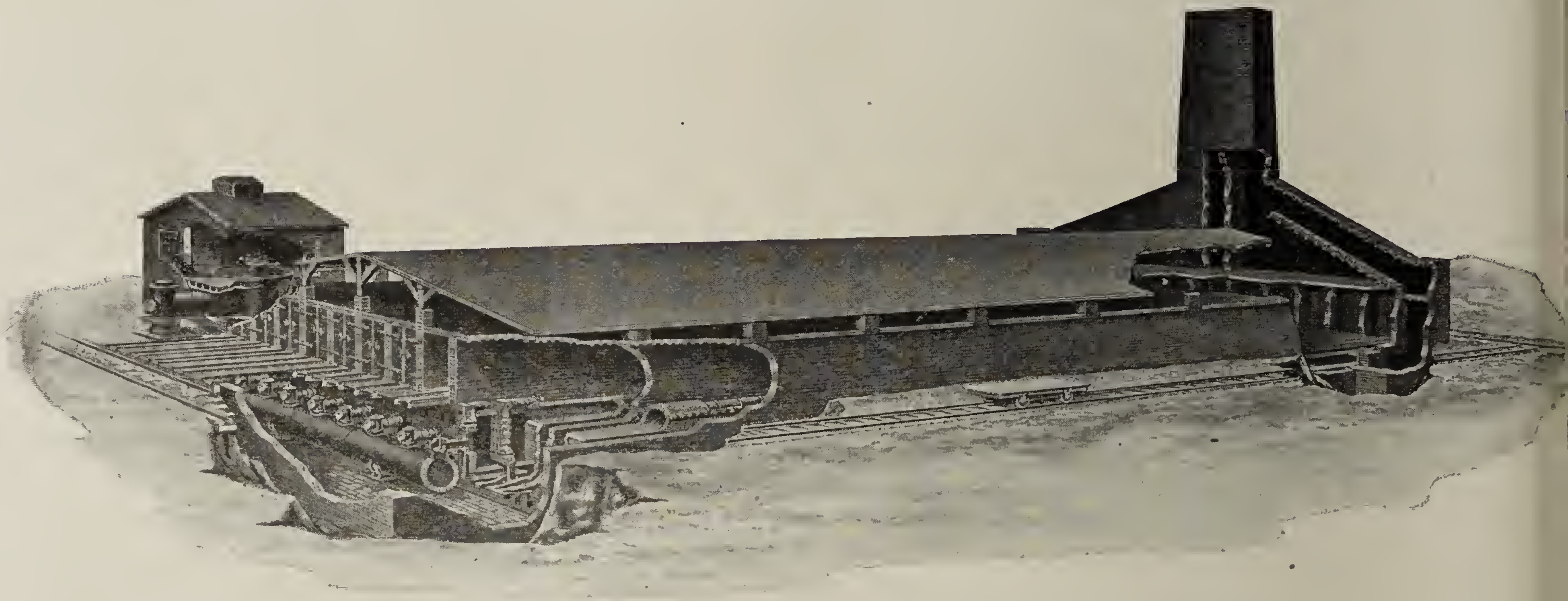
Dribbles—The kind that never fails to come back.

STRIKE AT TH

Coal=Fired Furn

SAVE FUEL AN

PRODUCER GAS for



International Producer Gas=Fired Dryers are Drying on 100 to 150 Lbs. of Coal per Thousand Brick

How Much Co

INTERNATIONAL CLA

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ABOR BY USING

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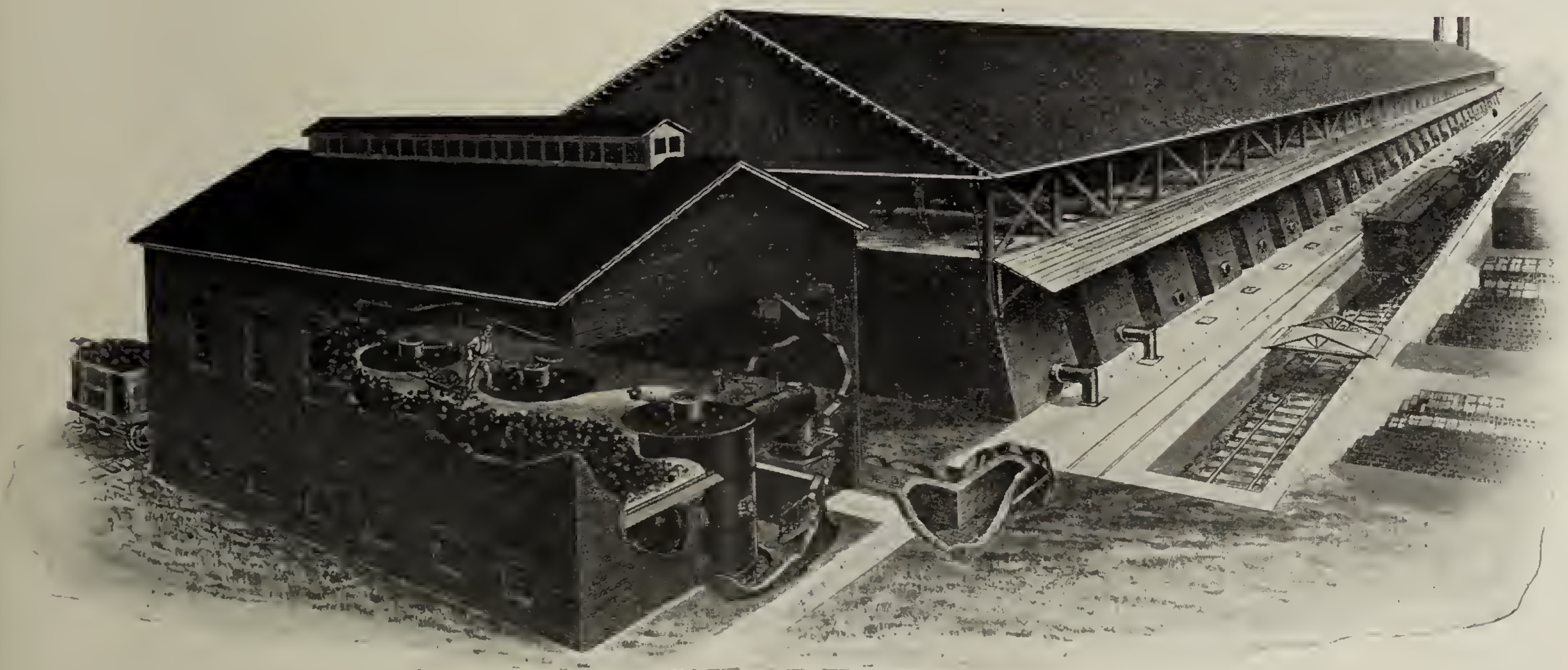

International Producer Gas Installations are Burning on 190 to 400 Lbs. of Coal per Thousand Brick

re You Using?

ACHINERY COMPANY

IO, U.S.A.

Written for The Clay-Worker.

SAN FRANCISCO AND VICINITY.

OWING TO THE RECENT request of the government that the people of the country discontinue all non-essential construction there is a good deal of uncertainty as to what March has in store for the clayworking industries. Although the floating of bond issues for public improvements is being discouraged more or less, there was considerable work planned and under way before this request was made. It is thought that the labor shortage should not be a serious one for any length of time. In the opinion of S. W. Smith, of the United Materials Co., Crossley Building, there is only a numerical, not a production shortage of labor, because this country doesn't know how to use labor.

"The world needs a good shaking up every so often," says Mr. Smith, "to bring it to its senses. Scores of old establishments are being reborn productively. Formerly, scores of plants paid their employes on the size of their departments. We now face a new condition. We should pay for efficiency. Wages should be raised as soon as the manager, foreman or worker cuts the costs."

With the increasing of shipbuilding business comes an increase in the demand for fire brick for boiler foundations and for new shops and shipbuilding plants. The Pacific Coast Shipbuilding Co. which has just laid its first keel, and the Moore & Scott plant in Oakland are both using large quantities of fire brick for government contracts.

The city council of Seattle, Wash., has awarded the following contracts for street and sewer work: The grading of Northlake avenue, to McGuire Bros., American Bank Building, for $70,957, and clay pipe sewers in Second avenue, S. W., to the Superior Construction Co., Seattle, at $69,824.

Articles of incorporation of the El Dorado Lime and Minerals Co., Placerville, Cal., have been filed with the secretary of state. The principal place of business is Sacramento. The incorporators are Emerson W. Read, Robert H. Schwartz and A. B. Warner, each having subscribed for a share of the capital stock, of which there are 1,000 of the par value of $100.

The N. Clark Pottery Works, Pacific avenue, Alameda, Cal., are being rebuilt. They have made arrangements for the following motors to be installed in the plant: Six 40-horsepower units and one 50-horsepower unit.

Proposals for the improvement of Rhode Island street, between Nineteenth and Twentieth streets, San Francisco, by a 14-foot strip of vitrified brick pavement, are being called for by the Board of Public Works.

The San Juan Quarries at the Old Mission Plant, San Juan, Cal., are filling their bins preparatory to starting their rock and clay business by the second week in March.

The firm of Clark & Henry has practically closed down all its street work in Stockton and Sacramento.

It is stated that the State Highway Department of California will undoubtedly suspend all highway work in 1918, unless encouraged by the federal government and guaranteed a supply of empty cars for all the materials required in the work.

A contract has been awarded to Clarence B. Eaton for the construction of a 14-foot central strip of vitrified brick pavement for Teddy avenue, between Delta and Elliott streets, San Francisco.

The Carquinez Brick and Tile plant at Eckley, Cal., is to be sold by foreclosure proceedings under a mortgage held by the American Trading Co., of San Francisco. The plant has been opened and closed spasmodically during the last few years, but little business has been done. A. O. Harrison, the original owner of the place, had big interests in Mexico and other places in the West, and believed in doing things in a big way. But the Eckley shale was found undesirable, and for a long time the plant has been idle.

The Stockton Fire and Enamel Brick Co., of Stockton and San Francisco, Cal., will be turning out both magnesite and chrome brick at its Stockton plant before the end of April, according to present plans. Several new kilns have been built and a large amount of new machinery has been installed, and the plant should be ready for a trial run before long.

F. J. Craycroft, a brick manufacturer of Fresno, Cal., was in San Francisco a couple of weeks ago. He reports that the outlook in the central San Joaquin Valley has been greatly improved by the recent rains, which have made the outlook for good crops much better than it was.

The Atlas Fire Brick Co. has been incorporated at Los Angeles, Cal., with a capital stock of $50,000, by M. I. Powers, N. B. Harris, E. S. Patterson and M. M. Harris.

Owing to the past dry weather, the Robinson Irrigation Pipe Factory, Gilroy, Cal., has been so busy that it has been working overtime to accommodate those who have an urgent need for irrigation. Mr. Burgess, manager of the plant, says that his orders have been coming from the southern, as well as the central part of the state.

The Board of Public Works, San Francisco, Cal., has ordered the improvement of Clipper street, between Douglas and Diamond streets, by the construction of a 7-foot strip of vitrified brick pavement.

The California Pottery Co., San Francisco, of which F. A. Costello is president, is putting in a sewer system at King City, Monterey county, Cal. Mr. Costello reports that its January business was so good that a surplus of work has extended into February, helping to keep business moving in that usually dull month. Now that the end of the rainy season is in sight, orders for various jobs, some small and others of large proportions, have been coming into the office, and March and April are expected to be big months.

F. R. Turton, of the Refractory Magnesite Co., has recently increased the output of his factory in Sonoma county by the addition of several new pieces of machinery. The reputation of the company is steadily growing, and it has recently received several big orders from Washington and Oregon.

San Francisco, Cal., March 4, 1918. SUNSET.

BETTER ROADS FOR SOUTHERN INDIANA.

The question of good roads continues to agitate the people of southern Indiana and the campaign to improve the highways will not down until the roads of southern Indiana are brought up to the standard of the roads in many of the older states of the east. Benjamin Bosse, mayor of Evansville, is at the head of the Dixie Bee Line Highway Association that has for its purpose the building of an improved automobile highway from Danville, Ill., to Adams, Tenn. A great deal of this highway has been completed and it is expected that President Bosse will ask for a meeting of the vice-presidents and directors of the association within a short time in order that the entire road may be inspected.

NO. 1
KNOWN
THE WORLD OVER
SCHURS
OIL BURNER CO.
Los Angeles, Cal.

NOTICE!
TO
BRICK MFRS.
FOR
QUICK BURNS
AND
BETTER COLOR
BURN OIL
AND USE
SCHURS
BURNERS

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

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SOLVING THE NATION'S TRANSPORTATION PROBLEM.

Analysis of conditions and requirements emphasizes the great importance of motor trucks and brick highways in satisfactorily meeting the present and future needs of the country in regard to transportation.

FOR THE PRESENT at least, it seems that the vexing fuel question has been disposed of and the chief problem now confronting manufacturers in all lines is that of **Transportation.** That is the bogy that will not down, but instead threatens to unsettle and make difficult the effective conduct of the business of the nation. It is a troublesome question, the solution of which is taxing the resources and patience of every manufacturer, large or small, throughout the land. Anything that tends to lessen the burden of uncertainty and facilitate the movement of freight will prove a blessing to everyone. The use of heavy service trucks is proving a great help, and we are pleased to bring to the attention of our readers what is being accomplished in that direction and the important part permanent, brick-paved highways are playing in these war-time problems.

A two-horse team hauled these five wagons loaded with corn to market over a brick paved road, Newman, Ill., January 18, 1911, when an empty wagon could not be pulled on a dirt road.

Many states have recognized the urgent need in this particular and have set about to accomplish some very effective work. In this connection a little insight into the plans and purposes of the Illinois state highway commissioners will be of interest. Illinois was one of the first states to adopt a systematic highway program, and as a result of their work that state has now a wide reputation for originality, resource and enterprise in highway construction.

We can best state the condition in Illinois by quoting from an address delivered by A. D. Gash, president of the Illinois State Highway Commission, before a class in the short course in highway engineering at the University of Illinois:

"As you are all aware, the new road law, which created us as the body to carry forward the road improvement of the state, provides that 15 per cent of the highways in counties of the first class, 20 per cent of the highways in counties of the second class and 25 per cent of the public highways in counties of the third class should be known as state aid roads. When this system of roads was laid out it was found that it comprised a little more than 16,000 miles of the public highways reaching into every community of the state, which when it should be improved would carry 87½ per cent of all the traffic of every name and nature. To have this system of roads completed of a quality of highways that could be used 365 days in the year and to make the lateral roads better so that all the people could get to this system of highways easily and quickly, would be, in the language of Shakespeare, 'a consummation devoutly to be wished.' This is a task that we, as officials, should bend our efforts toward completing within a reasonable number of years.

"The cost of improving of the state aid road system, properly constructed of the best type of road, seems to be an immense amount of money. That is the only question that awes the people. Yet, I declare that if this generation would undertake, with the means, facilities and improvements we have to build every public thoroughfare in the state of Illinois, comprising 96,000 miles of highways of the best type of road that we know, which, in my opinion, is a vitrified brick road, built by the monolithic construction, and if built eighteen feet in width to every home in the state within a period of thirty years, it would not be half the herculean undertaking that our forefathers undertook and consummated in bringing this splendid community up to the present state of cultivation and civilization that we have it today. When our ancestors came into this community, known as the state of Illinois, it was a vast, fertile wild. Nothing existed except the things that nature had formed. There was not a culvert, a bridge or a road, except the paths made by the wild men and beasts of the forests. Did our forefathers hesitate at the task set before them of carrying forward the improvements that were necessary to civilization? Nay, verily. They buckled on the armor of bravery, for they had to fight the aborigines and the wild beasts, and they also buckled on the harness of industry and went forward to their task. In less than a century they have built the bridges, built some good roads, many culverts and have built more good miles of railroads than any other state in the Union. They have brought the land into cultivation, erected the schools, the churches, the homes, the manufactories and the places of amusement that we enjoy. In other words they have made this region worth, if estimated in dollars, billions of treasure; yet we, of this generation, will hesitate at the proposition of building a system of state aid roads that will cost the people $180,000,000. The hesitation is oftentimes because it is said that we of this generation cannot build it in time for us to enjoy it in our lifetime. Have we less concern for our posterity than our forefathers? I cannot believe that it can be so said of this generation. It would belittle us in our own estimation. We desire these good roads for our children if we cannot get them finished for ourselves.

"Let us buckle on the harness of industry and go forward to erect as many miles of this system of roads of a good type every year until it is entirely completed. If we cannot complete it in this generation, let us start and let it be completed in the next. This splendid state cannot afford to do without highways that can be used every day in the year, over which to bear the heaviest loads of the harvests and products of our soil. We want the roads improved so we can transport anything we want to haul at any season of the year.

"One of the best services rendered by the State Highway Commission, in my opinion, after this state aid system of roads was laid out, was to make a careful estimate of what it will cost to build the entire system of state aid roads so that the people of the state should know the darkest side of the proposition from the beginning. That estimate is $180,000,000. This, at first blush, seems like an enormous amount of money, but when it is distributed among the 6,154,000 inhabitants of the state, it is seen at a glance that it amounts to less than $30 per capita. There is not an able-bodied man, woman or child above 18 years of age who could not pay their part of the cost of this system of roads within a period of twenty years and not miss it from their earnings or income.

A Splendid Brick Paved Road on the Dixie Highway, Vermillion Co., Ill., Five Miles from Danville.

"There is not an individual to be found who does not at once acknowledge the benefits to be derived from good roads and who does not further admit that it is practically the only public improvement required in the country districts to place the state of Illinois at the head of the sisterhood of states as a desirable place to reside. If we build this state aid system of roads of a permanent type, we may be assured that all the lateral roads will be made better while the state aid roads are being so constructed, and when the state aid system is so constructed, the townships will be relieved of expending at least one-half of their money on these main roads for upkeep, and with the same means expended in the future as has been expended in the past on the lateral roads, they will all be made much better during the period that the state aid roads are being constructed, thus making our whole system of roads better and worthy of this splendid state and its people.

"Roads of an adequate type of construction would, so to speak, remove the high schools of the villages and cities of our state to the boys and girls of the country so that they could get their common school and high school education and spend their evenings with father and mother around the old fireside. The churches and places of amusement would, so to speak, by reason of said improvement, be removed to the people residing upon the farms, and if the whole system of roads was made better and of proper construction, the cry will not be "back to the farms," but after they are so constructed, the cry will be "come to the city," because the people will desire to live in the country who once have a taste of the pleasures of good roads in the country. They will flock to the rural districts because of good roads. Good roads will enable the people to commingle with each other more and thus become wiser and better because of their social communion that benefits us all."

What Illinois has done and is doing can be accomplished in other states, and it is of vital importance to our nation at this time that every effort possible be put forth to improve the roads and highways throughout our country. The need for building substantial highways for military and commercial transportation is well explained in an article by William D. Sohier, chairman of the Massachusetts State Highway Commission, extracts of which appeared in a recent issue of Dependable Highways, and which we reproduce.

To build and maintain those roads which are of vital importance to the military and economic needs of the country, to concentrate with the utmost endeavor in accomplishing these ends and to avoid wasting effort on non-essential projects, are, according to William D. Sohier, the bases upon which road improvements should go on during the coming season and thereafter.

"From one point of view," he says, "all roads which are of any importance are military, namely any roads which have to be used for the transportation of any of the products which are necessary for the conduct of the war or the feeding of the people.

"The experience of England in what she has done on her highways since the war started is perhaps the best example we could follow. England has not been invaded, but she has had to enlist, train and equip large armies, has had to organize to make tremendous numbers of guns, enormous quantities of ammunition and supplies of every kind.

"It is very significant that she with her network of railways and small area has found that her roads and especially her main roads were of vital importance. With all the additional expenditures made necessary by the war, and with, undoubtedly, a large number of uninformed people saying she must save every pound possible—why not stop some of the expenditure on roads? She has not only not stopped, but has actually increased them in many places."*

Laying Dunn Wire-Cut-Lug Monolithic Brick Roadway.

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*Doubtless Mr. Sohier refers to the present attitude of England as reflected in the seventh annual report of the Road Board. As a matter of fact, she did stop at one stage, but now realizes the need of building and maintaining her main roads. She now finds that under increased traffic and deferred maintenance very much greater sums must be spent to rehabilitate her roads. Plans are under way and funds provided for this to be done.—Editor, Dependable Highways.

Continuing, the author points out the need of building important highways of substantial materials, well provided with foundations capable of bearing heavy loads. Furthermore, he urges the construction of bridges whose strength is in keeping with the demands of military use.

"With the heaviest guns in use today, it is probable that all of our bridges on the main line or lines that might be used ought to be built to stand at least fifteen to seventeen tons. Some of the heavy guns now being built weigh seventeen tons and have fully three-quarters of the load on the rear axle. Our roads must be made to stand the continuous pound and wear of three and five-ton trucks and of heavy wagons on iron tires, the weight of which will probably not exceed three tons."

In all of these discussions, Mr. Sohier indicates, that, in his judgment, the demands of military suitability in road construction do not differ materially from those of commercial use. He quotes portions of a letter from General Wood:

"The requirements for the wearing surface for military purposes may be stated as (1) absolute dependence in all kinds of weather, in all seasons of the year under the most severe usage; (2) wear resistant so that extensive or frequent repairs and maintenance will not be necessary; (3) easy and quick to repair without interrupting traffic and with simple tools and materials; (4) low in tractive resistance, and (5) offering a good foothold for horses and a good grip for rubber tires, and at the same time to allow a good rate of speed for motor trucks.

I CAN HELP YOU BY GIVING THAT FELLOW ON THE PLATFORM A LIFT!
INTER-TOWN TRUCK FREIGHT SERVICE.
THIS HOSS OF MINE HAS GOT ABOUT ALL HE CAN HANDLE
WAR
R.R.
NATIONAL RAILROADS
NORMAL LOCAL SHIPPING

—Courtesy Diamond Rubber Co., Inc.

"Here again it is seen that military requirements coincide closely with industrial considerations. Only the highest types of standard pavement surfaces answer these requirements completely. Wearing surfaces which are not suitable for use in our cities will not stand up under concentrated highway traffic. The block pavements, such as stone or vitrified brick, are probably the best types, but in localities where these materials are not available, carefully prepared sheet pavements of proved worth may be used satisfactorily. Methods of construction and types of surfacing, which are used to cheapen the first cost at the expense of the requirements stated above, should not be used. They are also proving uneconomical under modern commercial traffic."

The real value of good roads and the splendid service being rendered by the motor trucks is forcibly brought out in the following article reprinted from the Engineering News-Record:

"For years the inability of railroads to handle the business consigned to Atlantic ports has been patent. Embargoes have been chronic. To relieve this situation and in general to prevent waste in transportation, the Railroads' War Board was established shortly after we entered the war. The results have been excellent and the hope is entertained that through its efforts we shall be able to handle successfully the tremendous volume of freight that is coming.

"But we have not yet experienced peak conditions. The million dollars' worth of goods ordered by our government for use abroad have not yet started to move to the seaboard and our allies are continuing their purchasing. When the factories begin to ship the carriers will be deluged with freight. Unless the railroad board's efforts prove successful we shall see congestion the like of which has never been experienced.

"In this situation it is the part of wisdom to take stock of all of our transportation resources in order that we may know what alternative facilities are available; how they may be used in case of emergency and what steps are necessary now to put them in condition for maximum use if the demand should come.

Obviously, the waterways and the highways are two remaining agencies of transportation available. Already a subcommittee of the Council of National Defense is working on the waterway problem. To some extent also the committee is looking into the use of highways, particularly as they serve as feeders to the waterway system. The highway problem, however, is so large that it requires special study, and from the standpoint of an emergency war measure. Readers of this paper already know that the highways have been called upon to a large extent to save industries crippled by the rail congestion. Many a factory and business house in Cleveland would have shut down this summer, or have been run on part time, had it not been for the fleet of motor trucks that have been poured over the roads from Akron, Elyria and other points. A number of Michigan automobile plants have been making deliveries of pleasure cars and motor trucks this year via the highways from Michigan points to Toledo, Chicago and Indianapolis. One such plant has kept nine men busy piloting new cars from its factory to the seaboard. Furniture haulage between Boston and New York and between Philadelphia and New York is common practice, while the Goodyear Tire and Rubber Company will shortly increase a fleet of four trucks which has been running for a year between Akron, O., and Boston. These trucks carry two drivers and run night and day on a schedule that has been carefully worked out.

"These are but a few instances in which the roads have saved the day for business which found it impossible to secure adequate service from the railways. They are sufficient, nevertheless, to show what can be expected from a comprehensive highway system. To what further extent, however, this highway system will be called upon for relief service, what co-ordination there must be between state and government to secure satisfactory pavements over long routes, what provisions there are now for maintaining these prospective relief roads, and what further maintenance methods will be needed, should they be used by great fleets of heavy, fast-moving trucks, are problems that need a most thorough study.

"It is safe to say that only here and there are these good interstate roads available, and that on these maintenance provisions are not equal to the strains that heavy truck traffic might put upon them.

"In this situation there is imperative demand for a thorough study of the highway situation. It may lead to the conclusion that a Federal Highway Board is needed—comparable to the Railroads' War Board—to place our highways in a position to be operated at maximum efficiency as a relief for railroad congestion. The Chamber of Commerce of the United States, meeting in Atlantic City last week, recognized the seriousness of the highway problem, pointing out that all transportation agencies need to be brought to the highest state of efficiency in order that foodstuffs may be moved economically from farm to market, and the manufactured products from factory to consumer.

"If one further word is needed to point the urgency of the situation, one needs only to recall that upon our entrance into the war various agencies were discouraging a continuance of highway building. Now we are awake to the situation. We know that foodstuffs that should go to Europe may rot on the farm for lack of adequate transportation, and that our fighting strength overseas may be seriously affected because of the difficulty of getting munitions from the inland factories to the seaboard.

"Under these conditions action is necessary, and the first step, so far as highways are concerned, is the provision, through the Office of Public Roads or otherwise, for an immediate and careful survey of the situation."

COST OF BRICK ROAD.

There are always several methods of building each type of road surfacing and in discussing costs the methods of construction must be considered. Grading, ditches, culverts, bridges, etc., cost the same for any type of pavement and are eliminated in the cost estimates as they vary greatly in different localities. The monolithic brick road is considered by all highway engineers as the highest type of road surfacing. This construction using a nine-pound brick on a concrete foundation can be built in most sections at a cost of $15,000 to $24,000 per mile, sixteen feet wide, under present material and labor prices including subgrade and shoulders, other widths in proportion. Using gravel or macadam foundation or a lighter brick will cut this cost from 5 to 20 per cent. These methods of construction are proving satisfactory and are standing up under present traffic, but the most substantial construction is considered the best in the long run as it increases the life, reduces the maintenance and allows for increased loads and a great amount of traffic.

As to the life of such a brick road, government engineers conservatively estimate it at least at thirty years, although many are in use today in the United States more than thirty years of age which are still in good condition and apparently good for at least another thirty years, and brick roads in Holland which have seen more than 100 years of service are still in use. A bulletin on Brick Roads by the Office of Public Roads, U. S. Government, has this to say: "If brick pavements are properly constructed at the start, the work of maintaining them is very slight. The work of maintaining the pavement proper should, except for cleaning, be almost negligible for a considerable period.

"The life of a well-constructed brick pavement can not be estimated with any degree of exactness; first, because the traffic conditions are constantly changing, and, second, because no brick pavement which has been constructed in accordance with the best modern practice has yet worn out. Such measurements as have been made of the amounts of wear sustained by given pavements during comparatively long periods of years have not been sufficient to warrant any very definite conclusions as to the probable term of service, though they indicate that good paving brick wear very slowly under ordinary traffic."

Where Good Roads Are Needed Badly—"Somewhere in France."

The great war will come to an end, but the war stories will probably go on forever.

ORGANIZATION FOR COMMON BRICK MEN.

By W. D. Richardson.

"In Our Efforts to Protect Our Industry Let Us Not Lose Sight of the Fact That *Our Country is Engaged in a Great War and Must Win.*"

QUITE A BREEZE has been stirred up lately in the "Windy City," due to a lot of "hot air" about the need of organization for common brickmakers. Whether the motive back of this "hot stuff" in the first place was to belittle the National Brick Manufacturers' Association and discourage attendance at the Indianapolis convention and to satisfy a long-cherished ambition of certain Chicago men to start a rival organization centered around the trade publication there, or whether there was a genuine, sincere belief that the common brick industry was suffering, or likely to suffer in these war times, from lack of sufficient organized effort in presenting their interests before the Fuel Administrator, is a matter of individual opinion. However, we are going to assume, in what we have to say upon this subject, that the purpose of this propaganda is, as alleged, to save the brickmaking industry from fancied disaster, due to lack of representation or improper representation before the authorities at Washington.

We have read all of the published accounts of the conferences at Washington, and while we think the common brick manufacturers have no cause for complaint of the efforts made in their behalf, yet we must admit that these efforts have apparently so far been barren of results. We are even willing to admit, for purposes of present discussion, that the interests of the common brick manufacturers have not been properly taken care of, due to lack of co-ordination with the other branches of the brick industry in these conferences. What we want to consider just now is whether there is a crying need at the present time for organized effort on the part of common brickmakers, or of the makers of any kind of brick, for that matter, to go to Washington to protect themselves from rulings that may be made against their interests or to secure special favors or priority advantages that otherwise would be lost.

There is no question but that the difficulty of getting coal during the latter half of 1917 seriously crippled brick manufacturers by restricting their output, and that there is much uncertainty about the fuel supply for 1918, since it is properly the purpose of our Government to see that fuel is first supplied to domestic consumers, to ships and to those industries directly furnishing munitions and materials for carrying on the war. Every true American sees the necessity of this action of our Government and approves of it. We realize that it is not easy to look with equanimity upon the ruin of one's business, and it undoubtedly means ruin to some brick manufacturers to shut down their plants or to operate them at such a reduced capacity. But in most cases this condition is brought about, not by inability to get fuel for boilers and kilns, but by inability to sell the brick on hand or that would be made, a lack of orders for brick due to the greatly reduced amount of building. It is the Financial Administrator of the Government, instead of the Fuel Administrator, that is causing the chief trouble. The Secretary of the Treasury is openly recommending the stopping of all building during the war, except what is necessary for war industry factories and for the housing of laborers in these industries. In consequence, banks are refusing to loan money for ordinary building operations.

Nothing is to be gained by appealing to the Fuel Administrator. The demand for brick will regulate the supply. There will be no brick famine. In those few favored localities where the Government is building or where building is being done to carry out Government contracts, there should be no fear but that brick plants will be furnished fuel to operate to supply these needs. And the common brick business, let these Chicago people remember, is a local business, not a national business, and any attempt to put all brick plants under the same regulations of operation is not wisely considered and will not be successful. Nor need the Fuel Administrator fear that building brick manufacturers, either common brick or face brick, will use in 1918 anywhere near their normal amount of coal. They cannot continue to pile up brick on their yards, even if they are able to get and pay for the labor and fuel, when the demand is so light as it is now and is likely to be in most localities during these war times.

The Chicago editor in a recent issue of his journal, and in a specially printed circular sent to prominent brick manufacturers, is boasting of what he, forsooth, accomplished in a recent interview with the representative of the Fuel Administration at Washington, though he does not tell by what manipulation or by whose influence he secured the interview or the summons to a conference in connection with Professor Bleininger. At this writing it is not known that any order has been issued by the Government or that there will be such an order issued to brick manufacturers, but nevertheless this editor and self-appointed representative of the brick industry is trying to show us what can be done by proper effort, with the right (sic!) man, in the right way! And what did he accomplish that could not be accomplished at previous conferences? Why, this self-constituted representative did not hesitate to accept a 50 per cent. reduction of output of common brick for the year 1918, while the committees of the N. B. M. A. and of the A. F. B. A. could not come to any such agreement. Why make an effort to secure such an order as that? Why ask for any order at all, not knowing what the conditions are to be? Why not go on as before, if not doing business " as usual," doing all the business we can get? Leave it to each locality to make its own representation to the Fuel Administrator, with the assistance of its congressman, if need be. If it can be shown that the clay products of that locality are required for necessary building operations, it is reasonable to suppose that the necessary fuel will be supplied to these factories. In other localities, in most localities in fact, these matters will regulate themselves, as it does not seem probable that the manufacturers of brick would require, on an average, to operate to 50 per cent. of their normal output to handle all the orders for brick that they can secure. In such localities would it not be better for the brick manufacturers to pool their issues and instead of trying to run all of the plants on half time, run half of the plants on full time?

Now, in our efforts to protect our industry, let us not lose sight of the fact that our country is engaged in a great war and must win, and that all must make some sacrifices to this end. Undoubtedly some businesses, some brick manufacturers, will suffer great loss, even financial ruin; but, as Mr. Vanderlip said in his speech at Minneapolis, "It is better to have a receiver than an executor." And we who stay at home can only lose our profits or our business, unless some members of our families fall in battle in Europe.

Now the points we want to bring out in this talk for the consideration of common brick manufacturers are:

1. Be prepared for and expect decreased activity in building operations during the war, except in localities where buildings are being erected for the Government or for war purposes.

2. Without any frantic effort of a few individuals, for the most part not themselves brickmakers, to make the fuel question a basis for organized representations to the Government, have no fear but that fuel can be obtained for making brick that are required for all essential building operations.

3. Be ready and willing to make whatever sacrifices may be necessary for the cause of humanity in this great war, which is now as much our war as that of any of our allies in Europe or Asia.

4. There are many good reasons why common brick manufacturers should be better organized, but as conditions are different in almost every market, the only feasible plan of organization is that of local organizations affiliated with a national organization. The national organization, the N. B. M. A., already exists and is composed of the largest, broadest-minded and most progressive brick manufacturers in the United States. Join this Association; the fees are nominal, and it will help you individually and collectively, will assist your local organizations in all legitimate purposes.

THE CLAYWORKER'S COAL PILE.

NOT only is the item of coal for fuel an important one to the clayworker, but the clayworking industry as a whole makes the most important industrial customer of the coal mining industry.

Leaving aside the railroads, gas making and metal working industries, the clayworking industry consumes more coal annually than any other manufacturing industry.

The authority for this is the Abstract of the Census of Manufacturers in 1914, which gives under various heads a comparison of industries. Under the head of fuel consumption the clayworking industry is shown to consume practically nine and one-half million tons of coal, and the total fuel bill for that year, 1914, in which coal prices were comparatively low, that is the bill covering coal, coke, oil and gas was $26,601,525.

The exact figures of the fuel consumption by the clayworking industry for the normal year of 1914 as compiled by the census were as follows:

Anthracite, 291,366 long tons (2,240 pounds).
Bituminous coal, 9,170,010 short tons (2,000 pounds).
Coke, 66,872 tons.
Oil and gasoline, 1,921,256 gallons.
Gas, 23,821,028,000 cubic feet.

It was the cost of this fuel plus power rented or employed on the outside which brought the total fuel and rent of power up to $26,601,525 for the calendar year 1914. With coal prices more than doubled, if the same rate of operation and consumption should be kept up in 1918, the fuel bill of the clayworking industries will run at least fifty million dollars.

Some idea of the comparative importance of the clayworking industry and other industries in coal consumption may be had from the fact that it leads all other industries except railroads and metal working trades. The next industry in importance to the clayworking industry is the cement industry, which consumes about seven million tons of coal a year, including anthracite and bituminous. The paper and pulp industry about the same, railway car shops six and one-half million tons, cotton manufacturing four million, icemaking three and one-half million. Other important industries consume less than half the quantity of the clayworking business.

THE TILE ROOF IN THE WEST INDIES.

A report from Consul Thomas R. Wallace at Martinique in the French West Indies states that tiling is the principal material employed for roofing in Martinique. It is manufactured on the island and delivered at small cost by sailing vessels. A small quantity of better grade is imported from France. The cost of roof work with tiling is given at $2.28 per square meter (1.2 square yards).

Compared to this, iron sheets cost $2.46 per square meter and it is said that a few houses are shingled at a cost which is estimated at $2.64 per square meter. Slate is not employed for roofing and the idea is prevalent among the contractors there that it requires specially skilled labor to lay it for roofing and it is too expensive now compared to other materials now in use to attempt a change.

These figures plainly indicate one reason why roofing tile has made better progress in Martinique than has any other building materials. It has the price in its favor as well as its other qualities. Plainly, it is what we term a low-grade roofing tile, or rather it is not of the quality either in architectural beauty or in burning results that is commonly produced and insisted upon here for roofing purposes.

There is perhaps a chance to sell some of our roofing tile in Martinique and for the benefit of those who may be interested in the trade possibilities there for the finer homes there is in the hands of the Bureau of Foreign and Domestic Commerce available a list of dealers in building material there, which is File No. 87253.

The most important thought in connection with this report, however, is that wherever tile is once used it continues to be used regardless of what other materials may be offered. Some day we will be able to write of our great country here as the consul has written of Martinique, that the principal material employed in roofing is tiling.

THE SHINGLE ROOF INDICTED.

In the report on fires and their causes during the calendar year, 1916, the National Board of Fire Underwriters makes a severe indictment of the shingle roof. In discussing fire causes it says that it is difficult to separate some of them clearly. For example, there is $12,724,317 fire losses from defective chimneys and flues and $7,355,047 from sparks on roofs. These two items are closely associated and both of them call special attention to the shingle roof hazard, which is a large factor in many conflagrations.

It is pointed out that this shingle roof hazard is present in an inexcusable degree in every part of the country, but in the southeastern section of the United States it is especially marked. It is said, for example, that not long ago a representative of the Board of Fire Underwriters spent a day in the fire headquarters of a Southern city of 35,000 people and took account of the alarms which came in while he was present. Out of a total of sixteen, one proved to be a false alarm, but the other fifteen were for genuine fires, of which fourteen were shingle roof fires.

This is indictment enough of the shingle roof by authorities who are in a position to know that it should do much toward impressing people with the importance of abandoning shingles for more durable and fire-resisting material. The best material of all is burned clay tile. It is the logical roof and should be made the generally used roof by promotion and expansion of the roofing tile industry. Today the tile roof is the exception rather than the rule, whereas it should be the rule.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXIV.

Pit Furnaces.

A PIT FURNACE is in effect a gas producer. The most common form is the inclined grate bar, illustrated in Fig. 33, which closely resembles the original Siemens producer.

The grates are usually flat bars of iron hooked over a bearing bar at the mouth of the furnace and extending to within about one foot of the pit floor.

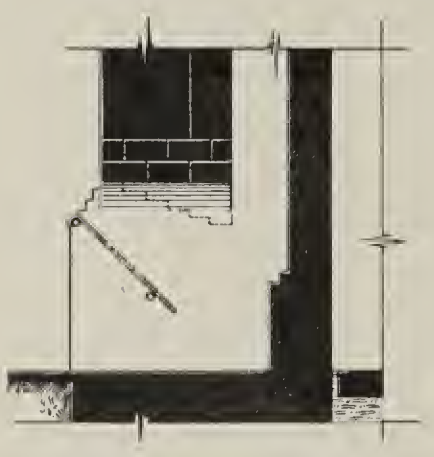

Figure 33.

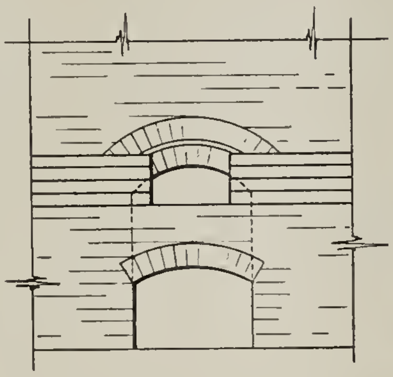

Figure 34.

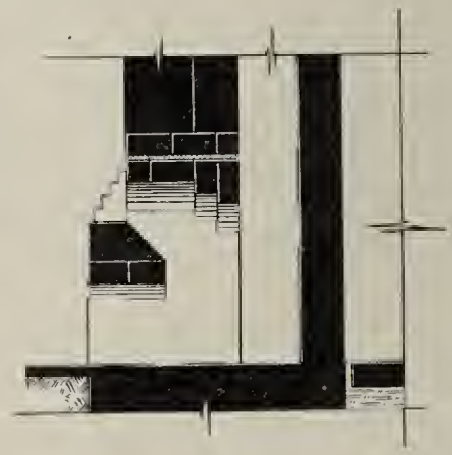

Figure 35.

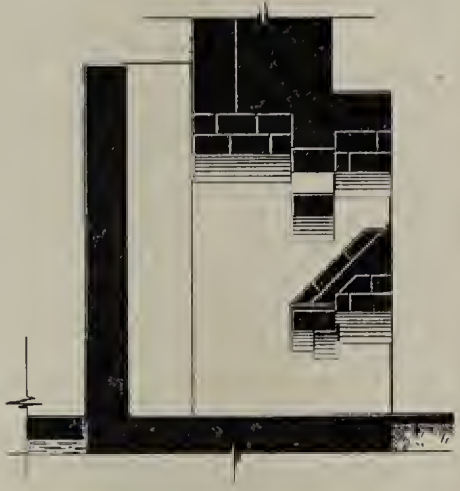

Figure 36.

The bars are set at an angle varying from 30 to 60 degrees from the vertical, and their purpose is less that of grate bars than that of a supporting plate.

The coal is fired at the top, and the secondary air supply is regulated by partially or completely closing the fire mouth with coal. As the coke in the pit burns and its volume becomes reduced, the coal on the plate slips downward or is forced down with the shovel prior to fresh supply of coal. Thus the coal passes through the several producer zones—distillation, dissociation, combustion and ash.

The primary air largely enters through the ash tailing out below the grate bars. The bed of coal is necessarily deep, and the gas rising from it is lean producer gas from coke. This mixes with the distillate gas and secondary air in the combustion space over the bed of coal where the final combustion takes place.

The usual construction of the furnace is with a straight, horizontal arch, but Hull in Trans. A. C. S. shows the advantage of stepping down the arch toward the bag, as shown by the dotted lines in Fig. 33. This, or a simple drop arch on the inner ring, forces the air downward keeping it in close touch with the coal and insures better mixing of the air and gases.

It is not essential that we get the distinctive results of a producer since the furnace is a part of the kiln and we get all the heat of the combustion except that lost by radiation from the front, regardless of the particular zone in which the heat is developed. There are many modifications of this simple furnace, some good and some not so good.

Frequently a solid plate of brick work or fire clay blocks is used instead of the grate bars and our preference is for such a solid plate as shown in Fig. 34 and Fig. 35. It enables us to reduce the size of the furnace mouth and gives us better control of the secondary air.

The Paul Beers furnace is illustrated in Fig. 36 and needs no explanation, except to call attention to the secondary air port in the drop arch, which, since it can be readily closed, gives the burner better control.

The McManigal furnace, Fig. 32, as noted, has a coking table, and this table is the distillation zone.

McManigal has also introduced a forced draft feature, and the air for primary combustion is heated by the radiation from the kiln crown. A second crown is sprung over the first with a space between the two. Air, by means of a fan, is forced through the top crown vent into the space between the two crowns, and thence at the spring level is conducted through pipes to the furnaces and introduced into the ash pit, which is provided with a tight door. See Fig. 37. In this way he collects the heat lost by radiation through the crown and returns it to the furnaces.

Unclassified Furnaces.

The Boss system of burning is a forced draft application. The furnace is simply an arched rectangular opening in the kiln wall. On the ground level in the furnace is placed a flat, rectangular cast-iron box about 12 inches by 24 inches with perforated top, or more correctly, with numerous air ports of special design in the top. One end of the casting has a connection for the blast pipe. The advantage is that slack coal or slack and nut coal can be burned at a rapid rate, whereas it would not be possible to use such fuel in a natural draft furnace.

The following data relative to the Boss system is an abstract from the Transactions of the National Brick Manufacturers' Association.

Subject—"Forced Draft in Up-draft Kilns."

The product is common bricks burned in updraft kilns. The kilns are sixteen arches long and 21 feet wide, and the bricks are set 42 courses high in the usual manner and platted.

The burners (grates) are six inches wide and two feet long, and each burner has 14 spaces 5½ inches long and ⅛-inch wide through which the air passes. The burners are placed in the fire boxes level with the kiln floor.

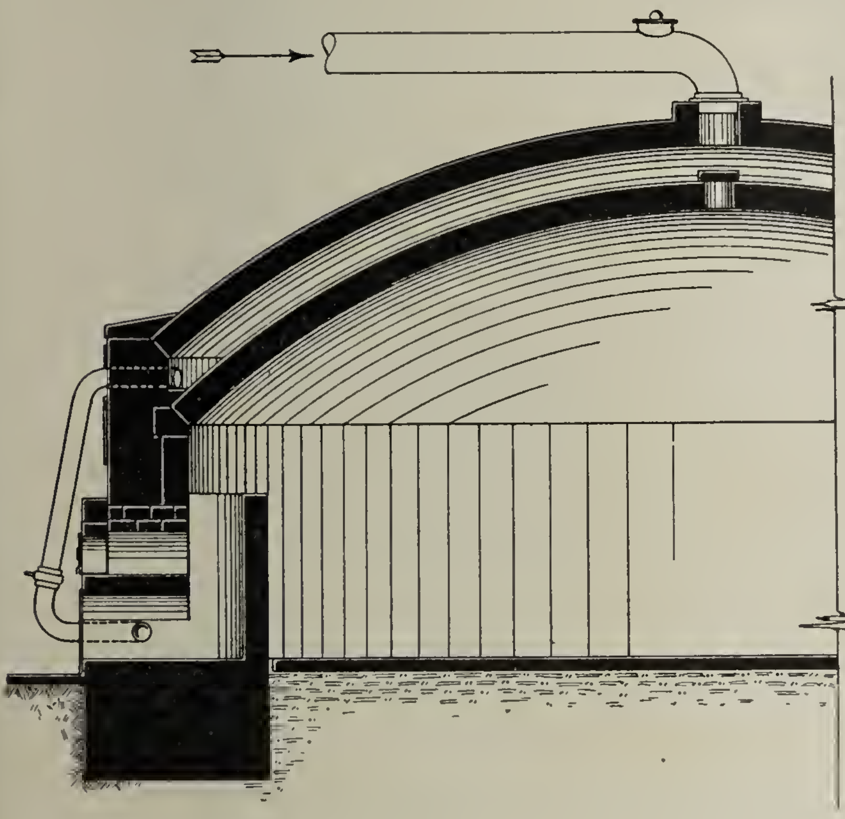

Figure 37.

The fan is 4½ feet in diameter and is driven by a six or eight-horse power engine.

A 24-inch duct runs at right angles to the kilns and there is a 12-inch duct down the side of each kiln, and from these side ducts 3-inch pipes lead to the furnaces. The draft is regulated by the speed of the fan and is measured by a "U" tube water gage.

The fan suffices for four kilns.

In starting a kiln the pressure is put on, then a shovelful of coals is thrown into each firehole, followed by a shovelful of slack coal. The initial pressure is one inch to 1¼ inches.

During the water smoking the fire doors are left open and the platting on top is up. When the dampness is off the pressure is increased to 1¾ inches to 2 inches and the firing consists of one-half a small shovelful of slack coal in each hole at 8-minute intervals. In about two days when the fire is through the bricks, the platting is tightened. The firing then is about 10-minute intervals using the same amount of coal. The total time required is six or seven days, during which six to seven bushels of coal per thousand bricks are used, with a result of 80 to 85 per cent hard bricks.

The advantages claimed for any pressure system are: (1) More rapid combustion, quicker burns in consequence, thus reducing the gross kiln radiation loss. (2) Pressure distribution of the hot gases throughout the kiln, thus getting more uniform results.

A step-grate furnace, Fig. 38, combines a grate-bar furnace in maximum degree with a pit furnace in limited degree. The purpose is to get an excessive bar surface within a limited space and at the same time get some degree of a producer condition to develop unconsumed gases to take up the excess air coming through the bar spaces. This type of furnace is particularly useful in burning low-grade fuels, such as lignite.

A number of furnaces, which carry out the producer gas principle, have been designed, but they are seldom used in this country in clayware burning.

Position and Size of Furnaces.

The possibility of burning clay wares economically depends largely upon the furnace power of the kiln, and in this important item engineers differ widely. We have seen twelve furnaces in a 30-foot diameter round kiln to burn ware to cone 08; eighteen furnaces in an equivalent kiln for cone 1 temperatures; twelve furnaces for cone 7 to 10; ten furnaces for cone 1, also for cone 9; ten to twelve furnaces for cone 26. One authority, whose opinion we value, states that if it were possible he would have a ring of fire entirely around the kiln and at the level of the top of the bag. Another authority would have the grate level four or more feet below the kiln floor level if practicable.

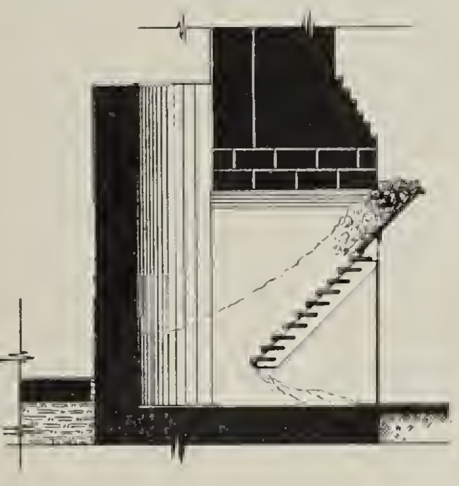

Figure 38.

The grate level should not be above the kiln floor level if for no other reason than that leakage from the ash pit through the base of the bag wall will keep the temperature in this part of the kiln below the required temperature resulting soft ware around the bottom of the bags. We believe there is an advantage in the burning by placing the grate level below the kiln floor level, but the advantage is less than the disadvantage of the depressed firing pit. A grateless furnace gives a level yard throughout and we would not go below this level with this type of furnace.

A flat-bar furnace, or any furnace with separate ash pit, requires a depressed firing pit to get the grate bars down to the kiln floor level, and we may readily go 6 inches to 12 inches deeper to get the bar level below the floor level.

Furnaces should not be wider than 36 inches nor longer than 48 inches in order to clean them readily. It is better to increase the number of furnaces rather than the size.

Grateless furnaces vary in width from 20 inches to 30

(Continued on page 586.)

THE ORGANIZATION OF OUR CERAMIC RESOURCES FOR NATIONAL SERVICE.*

By Edward W. Washburn,

Professor of Ceramic Chemistry and Chairman of the Sub-Committee on Ceramic Chemistry of the National Research Council.

THE EFFICIENT organization of its ceramic resources and industries is vitally important to the nation engaged in war, at any rate in the kind of war which is being fought today. Some of these industries are in fact so important that the Advisory Council for Scientific Industrial Research of Great Britain of these industries are in fact so important that the Advisory Council for Scientific and Industrial Research of Great Britain has placed them in a class known as the "key industries," that is, industries without which many other industries directly concerned in the production of war materials could not operate. Just to mention briefly some of the ceramic materials and products which are of chief importance, we have first of all optical glass, which has received prominent mention in the public press since America entered the war; also chemical glassware and glass for miners' lamps, for X-ray bulbs and for photographic plates. Then all kinds of refractory materials and products, used for example in boiler settings for warships and other vessels, and in metallurgical and other industries, among which may be mentioned fire brick and other fire clay articles, silica brick, chrome brick, magnesite brick and dolomite, bauxite, graphite, porcelain, alundum and zirconia products. Every industry which uses high temperatures has in fact its own special refractory problems, since the refractory material employed must, as you know, be adapted to the temperature, chemical action, abrading action, etc., to which it is subjected in each industry.

In addition to these we have the porcelain insulators used in insulating electrical lines, chemical porcelain, the particular varieties of porcelain required for pyrometer protecting tubes, and the spark plug porcelain upon the characteristics of which the efficiency of an aeroplane so largely depends. Other ceramic products which may also be mentioned are the enameled iron and steel vessels required in ammunition manufacturing, abrasives and abrasive wheels used in large quantity in all metal working industries, including the manufacture of artillery, and finally the concrete ship which is one of the most recently developed ceramic products.

It is the organization of the country's resources for providing these materials and products which I wish to talk to you about briefly today. We might say that the nation has three kinds of ceramic resources: First, raw materials; second, plants or factories and their equipment; third, trained men. How is the nation organizing these resources for its present needs? Aside from the government departments in existence before the war, there are three organizations which have been especially concerned in this work. These are: The War Industries Board, the National Research Council and the American Ceramic Society. The War Industries Board, as you know, is chiefly concerned with questions of production and matters connected therewith, and I shall confine most of what I have to say to the activities of the Research Council and the American Ceramic Society.

The National Research Council was established in April 1916 by the National Academy of Sciences at the request of the President of the United States, and held its first meeting in New York City on September 20, 1916. Its members were appointed by the president of the academy after consultation with officials of the leading national scientific and engineering societies. Representatives of the government were designated by the President of the United States. Since February 28, 1917, the National Research Council has been acting upon request as the Department of Science and Research of the Council of National Defense. The Research Council is organized with a general executive board and a great many special committees for the different branches of science in which the government needs assistance. The council works somewhat as follows: A scientific problem comes up in some branch of the government, some department or bureau, or perhaps in some industry furnishing the government with war materials. This problem, assuming that it is one on which the information desired is not at hand, is referred to the Research Council and by them to the proper committee. If the information is available to this committee, it is, of course, transmitted immediately to the proper government authority. If it is not immediately available, the committee gets into direct communication with the men or organizations in the country which have the special information which the government requires. If the information is not available anywhere in the country, the problem is then one of research. It is then the duty of the council to advise and assist the government in securing a solution of the problem. This advice may involve the recommendation of men who are qualified to investigate the problem and recommendations as to laboratories or institutions properly equipped for the work. Among these latter institutions some one of the government's many laboratories is most frequently employed.

The subject of ceramics is handled through four committees, the committee on glass technology, the committee on optical glass, the committee on cement and other building materials and the committee on ceramic chemistry in general. As a member of the latter committee I am more familiar with its works than with that of some of the other committees.

The committee on ceramic chemistry held a meeting at Indianapolis in connection with the recent meeting of the American Ceramic Society, and in order to increase the efficiency of its work decided upon two principal projects to be undertaken in the near future. One of these is the compilation of a Research Census of the country in the subject of ceramics. That is, what we need to know in order to serve the government most efficiently are the names and addresses of all men in the country engaged in research work on ceramic problems and what these problems are so that a classified index of such problems and the men engaged upon them can be prepared. With this information available the research resources of the country can be very rapidly mobilized upon problems which arise in ceramics.

The other project is concerned with an economic survey of the nation's resources in ceramic raw materials. As you know, before the war we were accustomed to depend upon foreign countries for many of the materials used in the manufacture of ceramic products. Clays, for example, used in the manufacture of grahpite crucibles and of various enamels were obtained solely from Germany and many other products were manufactured partially at least out of English clays. Now in a country of the size of ours, it would certainly be astonishing if we did not have somewhere within our borders resources of this character sufficient in quality and quantity to supply every national need and the hope of the committee, is to inaugurate on a large and systematic scale a geological survey of our resources in these raw materials so that they may know just what resources we have within the borders of our country, the location of such resources, their chemical and mineralogical composition and what they are good for. Of course, this is a big project and will necessarily require the labors of many men for many years, but it is time that systematic research of this character was started and we hope that steps looking toward the immediate beginning of this work will be taken before long.

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*A talk delivered at the Fortieth Annual Meeting of the Illinois Clay Manufacturers' Association.

The American Ceramic Society through its Committee on Industrial and Economic Preparedness has been doing a valuable work in its field. At the last meeting of the society you will remember that we had a report from the Committee on Methods of Testing Chemical porcelain; a report from the Committee on Clays and Raw Materials for the Clay Industries, giving a list of all the dealers in the country supplying ceramic raw materials, and a report from the Committee on Standards Concerning Standard Methods for the Testing of clays. The committee of the American Ceramic Society and the committee of the National Research Council are working in close co-operation.

There are, of course, quite a number of interesting things which I cannot tell you about in detail. I may just suggest, however, that in the case of concrete ship construction the ceramic chemists and engineers of the country are going to be largely concerned in the final solution of the problem. We have already solved the problem of spark plugs for aeroplanes, and the optical glass problem is well toward its final solution. We know how to make the different kinds of optical glass required and the problem has now largely resolved itself into one of quantity production.

The last group in the classification of our ceramic resources, that of trained men, presents a rather serious problem. You know that the government, in order to keep up the supply of technically trained men, has practically exempted technical students during their technical courses by allowing such students to enlist in the reserve corps of the engineering branch and placing them on the inactive list until they finish their courses of study. The government thus appreciates the great need of a continuous supply of such men. This need in the case of men trained in ceramics is as great, if not greater than in any other line. The demand for such men at the present time is far in excess of the supply and the present and probable future development of ceramic industries in this country is going to insure a still greater increase in this demand after the war. It is essential, therefore, that the production of such men be stimulated as much as possible, and I hope that all of you as members of one of the largest branches of the ceramic industries will on every occasion which presents itself to you explain to the young men of your communities the existence of this pressing demand and urge them to secure a technical training if they wish to engage in any form in industrial work in ceramics.

The older heads in the business don't always know more than the younger fellows, but from their longer experience they have a good chance to know some things that the youngster perhaps **hasn't thought of.**

FEEDING THE MEN IN TRAINING.

Feeding the men in military training at the army cantonments in this country is a matter so stupendous as to be almost beyond ordinary contemplation. Uncle Sam has made up his mind that the stalwarts who engage in his business of actually fighting the evils that threaten the liberty and freedom of the entire world shall have all that makes for strength and nourishment, and he wants those of his children who remain at home to appreciate the great responsibility he bears. There is not a loyal American in the entire fold who would have the soldiers cared for otherwise than in the best manner possible, and there is not a member of the vast legion of loyalists who is not willing to assist Uncle Sam to the best of his or her ability, making any sacrifices necessary. The money spent in giving the fighting forces plenty of good food could not be invested more soundly and securely, for the condition of the fighters will go far toward determining the great issue of the war between democracy and military autocracy.

The purchaser of a Liberty Bond knows that his money is helping to keep the army fit, but he does not appreciate the great task Uncle Sam has in feeding his fighting hosts. At the largest of the cantonments there are 40,000 men in training, to say nothing of about 10,000 animals employed in the war service. The food supplied to 40,000 men for thirty days makes a menu like this:

Bacon	180,000 lbs.
Flour	1,404,320 lbs.
Hard bread	60,000 lbs.
Baking powder	6,505 cans
Beans	128,000 lbs.
Rice	44,000 lbs.
Tomatoes	77,880 cans
Prunes	30,000 lbs.
Evaporated apples	14,000 lbs.
Evaporated peaches	10,000 lbs.
Blackberry jam	30,720 cans
Coffee	80,400 lbs
Tea	12,000 lbs.
Granulated sugar	252,000 lbs.
Evaporated milk	53,760 pints
Vinegar	3,600 gals.
Cucumber pickles	3,000 gals.
Salt	52,000 lbs.
Black pepper	13,000 cans
Cinnamon	1,920 cans
Cloves	720 cans
Ginger	1,440 cans
Nutmegs	120 lbs.
Sirup	12,720 gals.
Lemon extract	3,840 bots.
Vanilla extract	4,800 bots.
Soap	50,400 lbs.
Candles	24,000 lbs.
Safety matches	403,200 boxes
Rock salt	2,000 lbs.
Fresh beef	1,200,00 lbs.
Fresh mutton	75,000 lbs.
Fresh potatoes	1,200,000 lbs.
Fresh onions	224,000 lbs.
Lard	12,000 lbs.
Butter	40,000 lbs.
Ice	6,000,000 lbs.

Feeding 1,000,000 men means multiplying each of the above items by 25. A little arithmetic will show that 1,000,000 men daily will eat 5,971 barrels of flour of the wheat of a field nearly four miles long and almost as wide. They will consume 150,000 pounds of bacon, or the equivalent, if every hog were nothing but bacon, of 750 head weighing 200 pounds each. Ten carloads of potatoes, ten carloads of beef and a large part of a carload of coffee are necessary in the daily diet.

And on top of all this, bear in mind that there are approximately 250,000 horses and mules at the thirty-two cantonments. Each horse is allowed fourteen pounds of hay, but seems to be satisfied with only nine pounds of oats.

The above table and statistics should impress the farmer, live stock grower and general producer of foodstuffs that Uncle Sam needs all the assistance he can get in making good on his great and glorious job. And this "goes" for all the other people who go to make up Uncle Sam's big and prosperous family.

ECONOMIC METHODS OF HEATING CLAY STORAGE SHEDS.

By Cleve Hartzell, Superintendent Whitehall Drain Tile Co.

IN THIS article the author desires to outline a most satisfactory and inexpensive system of thawing and drying frozen clays and shales, which eliminates much lost time and expense for machinery repairs, which is no small item, owing to the cost of repair parts at this time.

After many experiments of every known method, the writer gives his views along practical lines of the ideal solution to overcome the frozen clay proposition. A method that will actually thaw and dry clay enough over night for the next day's grinding.

Every clay plant superintendent knows the troubles encountered during the cold winter months, also the disagreeable, rainy days in the spring.

Knowing from experience the inconveniences caused from these two evils, even in plants were they have provided sheds to house a reasonable amount of dry clay to mix in with the frozen clay, I find that a good heating system pays a good dividend on the money invested, even in the way of keeping the clay from freezing in the elevator caps, or rather buckets, which otherwise would choke the elevator many times during the day. Also by having the clay dry there is no chance of it freezing in the ground clay bin, which has been the result in many cases where the clay was wet or frozen when ground into the bin, the next morning the chutes to the wet pans or pug mill had to be taken apart and the frozen clay all dug out before the press crew could start operation. Sometimes the bin, being full, one can imagine the job of getting the frozen clay out of the bottom of the bin.

Speaking of actual experiences in plants in the northern states and the Canadian northwest, where the thermometer registers down to 40 and 50 degrees below zero, I can very well recollect one morning in Canada when it was 63 below, with the consequent displeasures of frozen water pipes in the mill room, etc. Not mentioning anything about the troubles experienced with the clay from an open pit.

Snow and Ice Covered Shale Add to Crushing Difficulty.

View of Clay Shed on a Cold Winter Morning.

Clay Pit Where Water and Snow Adds Much to Pit Foreman's Difficulties.

View of Clay Pit Taken on Rainy Day.

Steam Heat Not Practical for Heating Mill Room and Clay Storage Shed.

In several plants they have steam pipes around the outer walls of mill rooms and clay shed, using exhaust steam from presses or engine in the day time and at night using live steam.

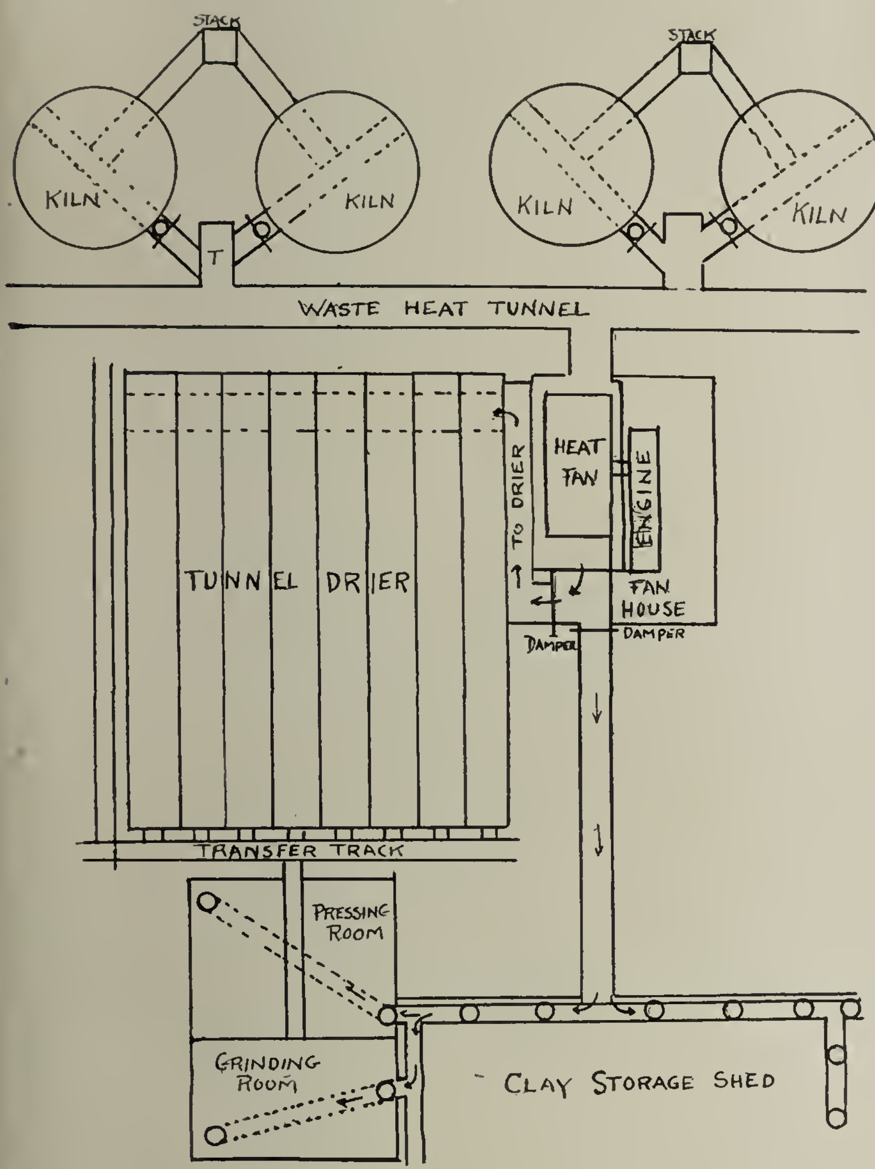
This system of steam heating did not prove at all satisfactory, owing to the condensation of steam going through these long coils. Very little clay thawing and drying was realized from the steam pipes and in many cases they would freeze and burst.

Natural Gas as a Means of Drying Clay.

The writer has seen natural gas used in thawing and drying clay, although not many plants are fortunate enough to have natural gas for fuel—but still there a few that have

In drying clay with gas, the clay is piled upon heaps, and a gas pipe stuck into the pile of clay, say about midway, the gas comes out all around the pile and is ignited and burns all over the pile.

The night watchman or burner rakes the clay down about every hour and by morning the piles are all level. Yet this method has its faults, as some of the clay gets burnt too hard, which takes the life out of it. Also considering the cost of gas and the risk of fire it is readily seen that this method is not advisable.



Plan of Waste Heat System.

Some Plants Use Rotary Clay Dryer.

Giving all due respect to the manufacturers of rotary clay dryers, as these machines, if properly handled, give excellent results, however, owing to the uncertain coal conditions and the scarcity of labor, many plants must discard these dryers to use a device of cheaper operation.

The life of a clay plant during the war depends on economical methods of operation, both in fuel and labor.

Waste Heat From Kilns the Ideal Solution.

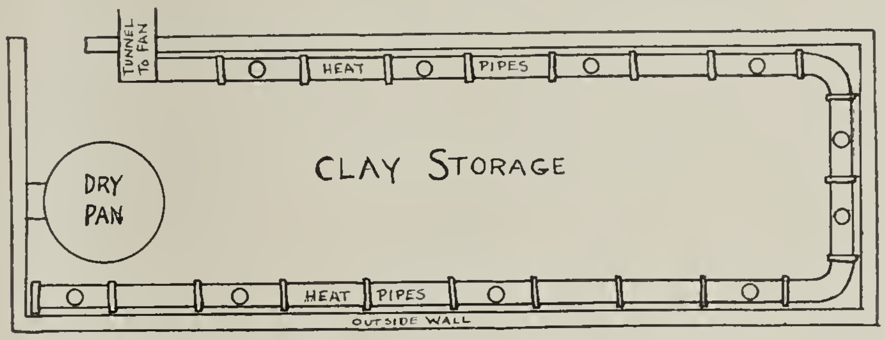
Many clay plant authorities do not approve of the waste heat system of drying ware, etc. It is not a matter of what we like best, but a matter of what we can use to keep the plant running and use the least coal possible, utilizing that which was formerly wasted. We should plan our work so as to reduce our crew to the lowest number possible. Many of us have already learned that we can be more economical in this particular.

By the drawings the reader will quickly grasp my idea of how waste heat systems can be installed for drying wares and heating mill rooms and clay storage sheds.

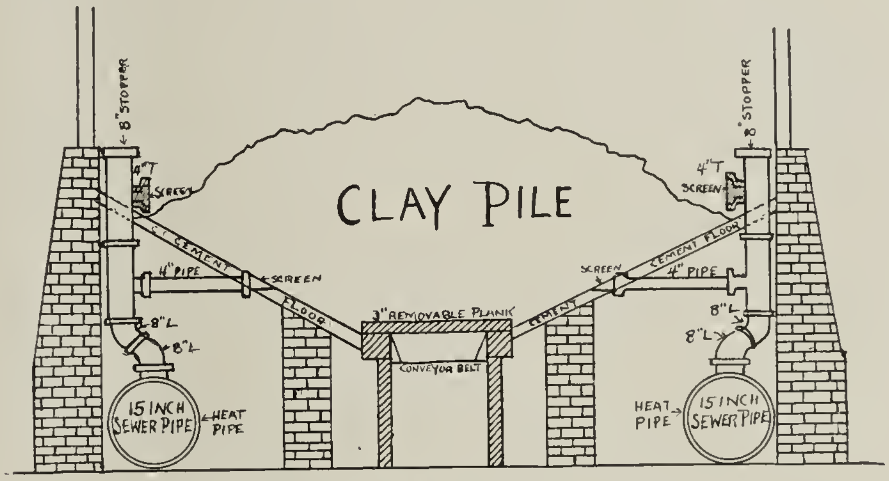
Written for The Clay-Worker.

BRICK NEWS FROM SOUTHERN INDIANA.

THE BRICK MANUFACTURERS in Evansville and other southern Indiana cities and towns report that trade has been rather dull during the past few weeks and they do not expect to see any general improvement in the near future. Many of the plants are being operated on part time only, while a few of them are closed down. The plants of the Standard Brick Manufacturing Company at Evansville are running on about half time now, according to John Andres, secretary and treasurer of the company, and they have between three and four million brick on hand. The company furnished the brick for the Junior High School Building at Evansville and it is expected this building will be completed some time this year. The company has also furnished the brick for the additions to the W. H. Dyer Canning Company and the Hercules Buggy Company at Evansville. The addition to the canning factory has just been completed, and it required only forty days to build it, and according to the contractors this broke all records for rapid building in Evansville. The Standard company also furnished the brick for the new Eagles' Home at Mt. Vernon, Ind., which was finished and dedicated a short time ago. Bids have been opened for a brick orphan asylum at Carmi, Ill. Bids for the new high school building at Lynnville, Ind., that will be built of brick, will be opened on April 23, the plans having been drawn by Evansville architects. According to Mr. Andres, building in southern Indiana towns is not as general now as it usually is at this time of year and he attributes this largely to the orders of Director General McAdoo advising people to curtail building along certain lines. The brick factory of Kleymeyer & Klutey at Henderson, Ky.,



A System for Drying Frozen or Wet Clay and Shale.



Sectional View of the Drying System.

started up a few days ago for the first time since the first of the year. The company has been shipping a good many brick of late to Owensboro, Ky. "I do not look for much improvement in business until after the war," said Mr. Andres the other day. "We have got to bear our burdens the same as the soldiers in the trenches and ought not to complain. Building is not going to be brisk this year and the brick manufacturers will simply have to make the most of the situation."

Henry C. Kleymeyer, general manager of the Standard Brick Manufacturing Company, and Mr. Andres, secretary and treasurer of the company, as well as Aaron M. Weil and Michael D. Helfrich, both well-known pottery manufacturers of Evansville, are on the committees of leading business men of that city in the third Liberty Loan campaign. The quota for Evansville and Vanderburg County is nearly three million dollars and the committee expects to pass this quota within a short time.

A large force of men is now at work on the street improvements at Grayville, Ill., a live town a few miles west of Evansville. Several brick streets are being constructed in Grayville and the work was suspended for several months during the winter season because of the severe weather.

Charles William Flentke, 64 years old, who for many years was superintendent of the Crown Potter Company at Evansville, died at his home in that city a few days ago after being sick for some time. He was born at Liverpool, O., but had spent most of his life in Evansville and had been connected with the Crown Pottery for many years. He is survived by his wife, four sons and four daughters.

J. W. Bostick of Grayville, Ill., president of the West Salem Vitrified Brick Company at West Salem, Ill., announced a few days ago that arrangements are being made to operate the brick plant this season. He expects a fair trade this summer.

The Edgerton Clay Products Company of Edgerton, Ind., with a capital stock of $50,000, filed articles of incorporation with the secretary of state a few days ago. The company will manufacture drain tile and the incorporators are Harold Meyers, Amos E. Meyers and Charles Asmus.

A country home for Lee Baskett, near Henderson, Ky., is being planned and will be built this summer. It will be two stories high and will be constructed of gray brick. A two-story brick apartment house will be built by Elmer Miller at Owensboro, Ky. The Standard Brick Manufacturing Company at Evansville is furnishing the brick for an addition to the plant of the Keck-Gonnerman Company at Mt. Vernon. The wholesale grocery building for R. E. Bierhaus & Sons at Vincennes, Ind., has been completed, the brick for this job having been furnished by the Standard Brick Manufacturing Company. The Clark High School building at Boonville is now ready for the roof. R. P. Farnsworth has purchased the Fredericka apartment house at Owensboro, Ky., and will build an addition that will cost in the neighborhood of $40,000. Work on the new canning factory at Boonville has been delayed for the past two weeks because of the inability to get certain materials. The contract will be let in a few days for a new warehouse for the Central Mirror Company at Evansville. The new Evangelical Church at Mt. Carmel, Ill., has been completed. A new brick salesroom and garage will be built for J. E. Kaiser at Mt. Carmel, Ill.

Brick manufacturers in southern Indiana were interested in a meeting that was held at Seymour a few days ago to take steps to build the Cincinnati-Evansville highway. Several business men from Evansville attended the meeting. The agitation for good roads has extended across the Ohio River into Kentucky and on April 23 there will be a special election held in Henderson County, Kentucky, to vote on the proposition to levy a special tax of 20 cents on each $100 for a period of five years, the money to be used in the building of good roads. Several other counties in western and northern Kentucky also will have special elections in the near future to vote on the good roads proposition.

Work is progressing nicely on the new Stevens brick plant at Evansville. The company will manufacture brick from cinders mixed with sand, using a new process, which is patented. The Stevens Building Products Company was incorporated in Evansville several months ago with a capital stock of $50,000. The officers are as follows: President and treasurer, L. M. Emlet; general manager, S. C. Stevens; vice-president, R. J. Siegmund; secretary, Charles Babcock. It is expected the new factory of the company will be in operation about the first of June. The cinders used in the factory are crushed and mixed with sand, but the brick is not burned in kilns. Sand lime machinery is used for curing the brick and President Emlet says the company can turn out a brick all ready for the market within twenty-four hours. The company operated a plant formerly in Cincinnati and Mr. Emlet says that buildings constructed of the company's brick as late as nine years ago are still standing and are "as good as when built." Mr. Emlet says after the Evansville plant is well under operation that it is the intention of the company to build factories in Chicago, Milwaukee, Detroit, Cleveland and eastern Pennsylvania. President Emlet says that it is not the intention of his company to reduce prices or engage in a ruinous competition. The plant will make one class of brick and it will be used both as a face brick and backing up brick, and, according to Mr. Emlet, it will be sold at all times at prevailing market prices. A HOOSIER.

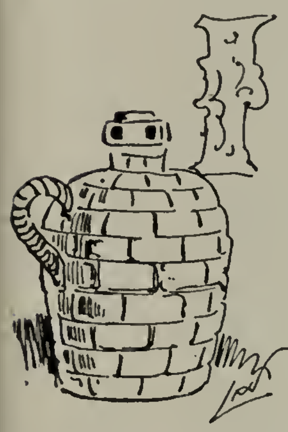
Written for The Clay-Worker.

OREGON CLAYWORKERS ASSEMBLE IN PORTLAND FOR THEIR FOURTH ANNUAL MEETING.

THE Fourth Annual Meeting of the Oregon Clayworkers' Association was held in Portland on Thursday and Friday, March 7 and 8. The first session was the business meeting. Mr. J. G. Hammer of the Standard Brick and Tile Company of Portland was elected president, Mr. W. C. Corbett of Corvallis Brick and Tile Works of Corvallis was elected vice president and Samuel Geijsbeek of the Geijsbeek Engineering Company, of Portland, was again re-elected secretary and treasurer. As a director for two years, Mr. W. E. Wilson of the Salem Tile and Mercantile Company, of Salem, was elected. Mr. Loyal E. Kern read his annual address and gave a brief summary of the work done during the year. Mayor Baker, of Portland, addressed the members in an industrial address, favoring more factories and more payrolls. The report of the treasurer showed a healthy condition and good standing of the association. A lively discussion was held relative to the making of three-inch drain tile. While all members agreed to discourage its sale, the meeting could not agree on a discontinuance of making three-inch drain tile. Several new committees were appointed and one will have in charge the preparation of a uniform price list for drain tile. The members making brick reported that it was hard to get labor and that the demand was not very brisk. A banquet was held in the Arcadian Gardens of the Multonomah Hotel, which was tendered by the Portland members to all other members and guests. The reading and discussion of the various papers occupied three sessions and was very interesting. Prof. W. L. Powers of the drainage branch of the Oregon Agricultural College gave a description of the work done by his department and the progress made in drainage and irrigation in the state. Prof. I. A. Williams, of the department of ceramics, stated that research work in Oregon so far as clay was concerned was very limited, but other deposits had been investigated, and he gave a description of the soda and potash deposits in various sections of central Oregon. At the evening session, Mr. F. C. Moore of the Denny-Renton Clay and Coal Company of Portland, read a paper on cost systems and illustrated same by examples on the blackboard. The members showed great interest and got some very interesting points regarding cost systems for clay plants. Next on the program was a paper by S. G. Ward on the use of hollow tile in construction. Mr. Ward emphasized the fact that hollow tile was replacing wood and concrete and that in general its use did not interfere with common brick. The next session was on Friday. Several business matters came up first, and it was decided to accept the invitation of the president of the Oregon Agricultural College and hold the next annual in January, 1919, in Corvallis at the time of Farmers' Week. Secretary Geijsbeek presented a paper on cost, selling and discounts and with blackboard showed some of the wrong ideas of clayworkers in arriving at their selling costs. The meeting was well attended and it was fully agreed among the members that they were well paid for attending the meeting and same was a decided success. Most of the out-of-town members left on the evening trains for their homes.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



INDUSTRIAL conditions among the potteries in the San Francisco district, as well as throughout the bay counties generally, are improving right along and a much more satisfactory production is noted in the various plants. Marked improvement is also noticeable among the brick factories. Conditions are becoming more settled in both the potteries and brick plants since the rainy season has about drawn to a close. This part of the country has had no rain for several weeks and an appreciable increase in business is noted for the period. Shipments are now going forth more freely, although there is still room for improvement in traffic conditions. There are plenty of cars now and the freight schedules are more regular than they have been for months. Many of the brick men are predicting that work on government contracts will increase as the year progresses, and the loss of any private contracts may be offset by this government work. New buildings, both for the growing industries on the coast and for the workmen's homes are being demanded every day, and since there is a shortage of steel for the big buildings and of lumber for the workmen's houses, it seems very probable that brick and clay men will be appealed to in this dilemma. Although there have been fewer prospects so far in 1918 than during the first three months of 1917, this fact establishes a better outlook in a way, because people who contemplate building now have been educated to the fact that prices are high, and are not likely to be lowered. Last year, however, those who contemplated building were not aware of the sudden increase until they took figures, and, naturally, this resulted in a large number of building propositions being deferred.

The California Magnesite Company has opened general offices in the Mills Building, San Francisco, and a plant in Pittsburg, Cal. It is said that up to 1916 magnesite was produced nowhere else in the United States except in California. The state of Washington is now a small producer, and British Columbia is turning out a limited supply.

The Coast Fire Brick Company of Oakland has been incorporated and has bought certain secret formulas for the manufacture of magnesite and silica brick, and a lease and option to purchase a manufacturing plant in Oakland. The company has placed $4,000 at the disposal of James Drummond, D. K. Collins and E. N. Lynn to be used in launching the business on a safe basis.

The terra cotta branch of the N. Clark & Sons plant is working full force, and work on the remainder of the plant, which burned last year, is progressing rapidly. The firm is to supply the architectural terra cotta for the $300,000 State Fair pavilion at Sacramento at a cost of $15,520. Gladding, McBean & Co., with local offices in the Crocker Building, have the tile roofing contract for $12,100.

Conditions with the San Jose Brick Company, Postal Telegraph Building, San Francisco, are quiet, according to O. M. Tupper. However, he says he has every reason to believe that by the end of April business will pick up and that the month of May will compare favorably with that of the same period in 1917.

R. Healy of the Denny-Renton Clay and Coal Company of Seattle, with San Francisco offices in the Merchants Exchange Building, says that while the demand for clay sewer pipe is only fair the call for fire brick is good. He expects the coming of the dry weather will, as usual, help in making business better in all clay and brick lines.

Frederick R. Turton, president of the Refractory Magnesite Company of San Francisco, reports that his mine at Preston, Cal., put out 100 per cent more magnesite during February and March than during the two preceding months. He has recently filled two large government orders.

J. T. Roberts of the Stockton Fire and Enamel Brick Company, Rialto Building, was so busy making out his income tax reports the last two weeks of March he had little time for anything else. Eugene Corrigan, who has been managing the business during this time, says that the company's affairs were never in better shape. The plant has been running full capacity for some time, and there are more orders on their books now than they are able to care for at present.

A. Chandler Gladding of Gladding, McBean & Co. was in town last week visiting the local headquarters. He reports that, although work has picked up somewhat at the company's terra cotta and sewer pipe plant at Lincoln, Cal., the place is still working about half of its normal capacity.

Work was started last week for the new pottery works of the West Coast Pottery Company at Burlingame, Cal. The building is to be 350 feet long and in places three stories high. W. A. Weiss is the directing head of the company and it is estimated that between 400 and 600 men will be employed when the factory is started. The company has bought six blocks of land, including the streets, which are to be closed. Tile, dishes, plumbing and other kinds of pottery will be turned out.

The Tucson Pressed Brick Company, Tucson, Ariz., is now operating with a capacity for the manufacture of more than 50,000 brick and tile every day. It is said that the secret of the success of the plant is the possession of the proper kinds of shales. On the outskirts of Tucson the company owns about 1,000 acres of ground, which are said to contain some of the best brick and tilemaking shale in the Southwest. This ground is being worked daily by the company and the shale brought to the plant for treatment.

An appropriation of $1,500 has been made for repair work at the Royal Mausoleum grounds in Nuuanu Valley, Honolulu, H. I. The work consists of concrete curbs and a brick sidewalk.

The Far West Clay Company, Tacoma, Wash., has increased its capital stock to $350,000.

Within the next month Guerneville, Cal., will have what is reported to be one of the largest magnesia factories in the United States in operation, and the largest one making magnesia from magnesite. For nearly a year the Harker Company, which has long been identified with the mining of California magnesite, has been opening up its extensive holdings on Gillam Creek, north of the town.

The following officers were elected last week at the annual meeting of the Coleman Brick and Lime Company, Santa Barbara, Cal.; O. E. Millar, president; Magnus Johnson, vice-president; D. O. Kelley, secretary, and W. R. Coleman, manager. Reports of the officers show that the company is in a healthy condition.

E. W. Fields, a pipe manufacturer of Sacramento, Cal., is visiting the heads of the various brick and clay companies in San Francisco this week. While in the city he is making his headquarters with F. A. Costello, president of the California Pottery Company.

Walker & Young, Honolulu, H. I., have been notified by the army that they were the successful bidders for the construction of the clay pipe sewer system at the aviation base at Ford Island. Their bid was $63,975.

When the Federal embargo upon magnesite was lifted a couple of weeks ago, $100,000 worth of the ore, which had been tied up for weeks at Porterville, Cal., was started on its journey to the various factories.

The Anderson Brick Company, Sand Point, Idaho, has increased its capital stock to $15,000.

San Francisco, April 5. SUNSET.

THE APPLICATION OF PRODUCER GAS TO PERIODIC MUFFLE KILNS.

By Fred B. Ortman.*

ONE of the most recent developments in the use of producer gas as a fuel for kiln-burning is its adaptation to periodic muffle kilns. At the plant of the Northwestern Terra Cotta Company, Chicago, an experimental installation of the Underwood system has been in operation for a few months, and while it is too early at this time to draw definite conclusions as to all of its possibilities, as compared to direct firing methods, a few points have been brought out which might be of interest.

Installation.

The present installation consists of two rectangular up-draft brick producers of the type known as the Manufacturers' Equipment Company's type "C." They are 6x15 feet inside and are fired from the top through three of the usual bell-feed hoppers. They are equipped with a water seal, the air and steam being admitted by means of a blower of the injector type.

The gas from each producer empties into a main duct from which distributing flues take off to each of two 18-foot diameter up and down draft muffle kilns. Each kiln has nine fire boxes equipped with the Underwood system's producer gas burners.

The air for combustion is supplied at a pressure of about eight ounces by a small blower fan, and is conducted around kilns overhead in a 12-inch galvanized pipe. It is not preheated, being supplied to the burners at atmospheric temperatures.

Operation.

The adaptation of the system to kilns of the above type involves the solution of two problems, viz., the producer problem and the kiln problem.

Producer Problem.

The conditions necessary to maintain, in order to produce a good quality of gas, are perhaps much the same as in any other type of producer installation. The requirements, however, are somewhat different from those of continuous kiln or other similar installations, in at least two respects.

First: The gas must constantly be maintained at high quality and burned with as low an excess of air as possible, in order that the volume of combustion gases be kept at a minimum. Otherwise, the comparatively complicated flue spaces which exist in kilns of this type will become overloaded and choked, resulting in excessive heat in the combustion chamber and an uneven burn. In the burning of brick or other material in open kilns, it is reported to be of distinct benefit, especially during the water smoking period to burn the gas with large volumes of air, since the excess air thus introduced performs the very necessary function of assisting in the rapid removal of the water. In the muffle kiln, however, this excess air performs no such function; the air for water smoking being applied from other sources quite independent of the combustion gases.

Second: The gas must be fed to the burners primarily by pressure, rather than by suction as in the case of continuous kilns, for example. This introduces another factor influencing the possible adjustment of the steam and air at the producer, quite apart from the adjustment which might be necessary for producing the best quality of gas. This is particularly in evidence when a kiln is first lighted and before a good stack draft is established.

In order to meet these requirements, therefore, it is necessary that the producer plant be kept at the highest possible state of efficiency. Experience thus far with the above installation indicates the following to be the essential factors for obtaining this result:

First: Ample capacity in more than one unit. This is obviously necessary in order that the supply and quality of gas may be maintained under varying loads and during breaking down and cleaning of fuel beds.

Second: The selection and use of the best possible coal commercially available. Such a coal should be as nearly uniform in size as practical and not too large. It should also carry a low sulphur and ash content. Probably a washed nut would be the ideal coal, although in some markets, natural coals might be available which would be more economical.

Third: The careful regulation and standardization of operating conditions, such as steam and air supply, amount of coal and frequency of firings, frequency of pokings of fuel bed, breaking down, cleaning, etc. These conditions vary greatly with different coals and can only be adjusted by actual experience on part of the operators. It is important, therefore, that after a suitable coal has been found every effort be made to insure a steady supply of same, as every change of coal results in at least a temporary drop in the efficiency of the producer.

Kiln Problem.

Being assured of a steady and ample supply of a good quality of producer gas at the burners, it then becomes necessary to burn same economically and with satisfactory results in the kiln. The first difficulty one would expect to encounter in this respect, viz., the use of cold air for combustion, is very satisfactorily solved by the Underwood burner. This burner, while simple in design, has proven very efficient and permits of delicate control of air and gas in any desired proportions. In fact, it is this possibility of control which constitutes one of the chief advantages of the system. After incandescence has been established in the combustion chamber, the character of the stack gases may be varied from reducing to any desired amount of air excess. A comparison of the following analyses of flue gases drawn from two kilns, just before finishing off in each case, shows the possibilities in this connection.

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*Digest of paper presented at the Fortieth Annual Meeting of the Illinois Clay Manufacturers' Association, Champaign, Ill., March 13, 1918.

Gas-Fired Kiln.		Direct-Fired Kiln.	
CO-2	11.0%	CO-2	9.2%
O-2	0.2%	O-2	8.2%
CO	0.4%	CO	0.0%
N-2	88.4%	N-2	82.6%
Air excess	0.8%	Air excess	60.0%

A similar control may be maintained over the length of flame, resulting in even burning to the same degree as with coal firing.

Another point observed is the effect on kiln linings, flues, etc. While the operation has not been continued a sufficient length of time to supply definite data on this point, it is clearly apparent that the uniformity of temperatures maintained with the gas firing, due to the elimination of sudden drops which occur in the fire boxes and muffles when the fire doors are opened, with direct firing, will tend to greatly reduce the necessary kiln repairs.

As regards fuel consumption, which is, of course, a matter of extreme importance, it has not been possible as yet to drawn definite conclusions, owing to the fact that the producer has not been operated continuously; also to the fact that the prevailing fuel situation has prevented complete tests being made of the various coals available. There is, however, a producer radiation loss, probably amounting to about 13 to 15 per cent, which does not exist in direct fire practice. On the other hand, there is made possible a certain saving in loss of heat through excess air in combustion gases, and a further saving through a reduction in per cent of combustible in the ash. Whether these savings will offset the producer radiation loss remains to be seen. It is probable, however, that given the very best conditions possible to maintain under each system, no very great saving would be effected in actual coal consumed.

Generally speaking, therefore, once the producer problem is satisfactorily solved, the kiln problem becomes comparatively simple, and experience with the installation in question seems to justify the conclusion that in periodic muffle kilns attaining a temperature of cone 1 and perhaps very much higher, the Underwood system presents the following advantages over direct coal firing methods:

First: Better control of air excess in combustion gases.

Second: An equal or better control of kiln temperatures.

Third: A considerable saving in kiln repair and maintenance cost.

Fourth: An equal or perhaps slightly lower labor cost, depending upon the extent to which automatic coal and ash handling devices are employed.

Fifth: A very much cleaner kiln yard.

Sixth: A decided lessening of the smoke nuisance.

Seventh: A relative fuel cost, depending upon (1) the price of a coal suitable for producer vs. the price of a coal suitable for direct firing; (2) the comparative value in heat units of the heat lost by producer radiation to the heat saved through reduction of excess air in flue gases and reduction in per cent of combustible in ashes.

THE WIDER FIELD FOR MACHINERY.

Introductory Foreword.

A TRADE PAPER, to be worthy of the name and of the support of the trade it serves, should have ideals which involve taking the initiative and pointing the way to larger fields and future improvement in all branches and divisions of the industry which it represents.

From time to time the editorial force of The Clay-Worker, with this conception of trade paper ideals as a part of its religion as to duty, has been moved to do things that in the modern interpretation are perhaps classed as hobby riding. With this as the accepted classification a number of hobbies have been ridden to the goal of success, and meantime others have been taken up. One of the newest, but not by any means the smallest of these, is that of the larger field for clayworking machinery. In this idea it is recognized that not only have the machinery people claim to some interesting text matter in the clayworking paper for their own special benefit, but there goes with it a broader view of making tthe American influence felt even in the far-away countries in the clayworking industry. The introduction and use of our machinery and methods into other countries will carry with it not only some of the progressive ideas of American energy, but in the final analysis it will help establish American leadership in a broader and bigger way and will include therein clayworking as well as the machinery for carrying on the work.

This is not said by way of an apology for giving over some space to the discussion of machinery subjects. No apology for this is needed or called for. It is but an explanation of the fact that in contemplating this bigger field of possibilities use has been made of a broad view, that the extending of the trade and usefulness of any one division of the industry carries with it the influence of the other.

Where the Wider Field Lies.

The wider field for machinery really lies in two directions. One is the wider extension of the use of machinery in the domestic industry, which includes the development and extension of certain lines of the industry as one phase, but which also contemplates wonderful opportunities for widening the field of machinery by making machinery a more important factor in each clayworker's plant, by making machinery do more of the work formerly done by man than it has heretofore. This is a big field that has much in the way of widening possibilities to it, and is entitled to much discussion, which every one who reads this is invited to participate in by forwarding thoughts or lines of argument as may occur to them as being worthy of a place.

The other direction and the one toward which the present article is centered is in what we term the export trade possibilities for machinery. There is what has up to now been practically an undeveloped field on which much attention has been centered during the past three years. Various ideas have been advanced about it from time to time, and various experimental steps have been taken and efforts made to develop trade, and to open the way to possible new fields for exploiting clayworking machinery.

Broadly speaking, the attention has been centered in two directions. One is to Europe, to its possibilities when the day of reconstruction dawns. The other is toward the North and South American continents not embodied in the United States, with particular stress on the possible development in the Latin-American countries.

Opinions of Machinery People.

To supplement the thoughts and theorizing of The Clay-Worker's editorial force various people here and there who are interested, or ought to be interested in the development of this, have been interviewed and asked for opinions based either on theory or experience.

To use a political term, some have been for and some against. Some have experienced so many difficulties in undertaking to secure and fill orders for Latin-American countries, that they have become discouraged and do not view favorably any idea looking to future efforts in this line. Others have fared better. Then there are others who have had some unfortunate experiences, but are taking what may be termed a long-headed view of the situation. They realize that there are many difficulties to be overcome in opening up this new and wider field, and that the difficulties are greatly multiplied at the present time because of war conditions. So they do not expect great immediate results and will be content to see possibilities of final fruitful returns from persistent effort put forth. What they are more anxious to get at right now is where and how efforts at developing this field may be put forth with the best promise of returns.

Cuba as an Example.

In one instance the possibilities of clayworking developing in Cuba was mentioned to a machinery man. The response to this was that the machinery concern in question had in hand at the time quite an important order for Cuba. Cuba has prospered so much during the present decade under American guidance and advice that it is starting in to build good homes, and since the ultimate in good home building is the use of burned clay products, this looked like a field ripe for the introduction and development of the clayworking machinery trade. While small in size Cuba today is something of a leader of Latin-American countries in the matter of prosperity and progress, and presumably some of the steps in progress being taken there will be followed, perhaps in a modified way, by many of the Latin-American countries, including even troubled and strife-torn Mexico.

One of the interesting lines the conversations took in the rounds of discussion of export trade with machinery men was that which pertained to what form of clayworking and what class of machinery would likely be in demand first. Some expressed the view that first there would be in those countries in which clayworking is as yet undeveloped an equipping of soft-mud plants, mainly for local requirements, which would be followed in time by stiff mud plants and a more elaborate entering of the industry on a scientific basis after familiarity with the machinery and a better understanding of the clays and shales available for use.

The Beginning of Things.

Others took a different view, and could not see any tenable objection to early development in stiff mud clayworking equipment on a small scale at first in each case and gradually enlarging as conditions merit.

A factor that will enter here to some extent, which perhaps may not have had the attention it merits, is that of the methods of clayworking already instituted or understood by the people where it is hoped to introduce labor-saving machinery and American ideas and ideals. Practically every people in the world makes brick and works clay to some extent in some form. Some go more extensively into pottery, but nearly everywhere either sun-dried or baked or burned clay is used more or less for building purposes. Where they have developed to the point of burning clay there will be the question of sizes involved and methods followed to take into consideration as a starting point from which to introduce any machinery or ideas calculated to improve the situation for the people and to further the trade interests of machinery manufacturers. These conditions will be found to vary, as will also the nature of the clays and shales available in different countries, and different sections of the same country. In fact, there are many things which enter into and wield an influence, including the availability and kind of labor, style of architecture, type of houses to be built and the architectural aims as well as the material possibilities and progress of the country itself.

The Latin-American Field.

There are one or two things which practically all of the machinery men talked to are agreed upon. Among them is that we must expect to encounter difficulties, more of them during the war period than we would under any normal conditions. Let us not forget, however, that the same war period which makes these difficulties of transportation and red tape and added expenses, also makes the opening practically a free and open field for American manufacturers. And this in a great measure should balance the other.

Another thing that practically all agree upon is that the big sphere of influence and development of American machinery and equipment logically is in and around the two Americas. Here, all agree, we have wonderful opportunities for better trade development and it is merely a matter of time and the extending of trade lines, trade literature and the sending of men and the making of trade connections which in time will follow the establishing of branch financial institutions in the various countries so as to pave the way for handling the financial end of the business. In this work, as in our commerce generally, it is easy to see that trade will follow banking connections. And those countries in which branch banks and proper financial connections are first made with the United States are those in which the first development work should be done in the big field outside of the United States for clayworking machinery.

Old Country Prospects.

In the matter of the possible demands and requirements for Europe and the older countries generally, when the war ends and the work of reconstruction starts, opinions differ and conclusions are about as uncertain as weather prophecies. Some are inclined toward the idea that just as we are supplying tractors and other labor-saving machinery of an agricultural kind to help save the food situation because of the shortage of help, we will, when the war ends, supply the clayworking machinery which admittedly is in this country designed to effect a greater saving in labor than the clayworking machinery in any of the older countries.

Most of the machinery people interviewed agree in the opinion that there will be considerable demand, or one might say opportunity, for the introduction and sale of our labor-saving machinery to the warring nations when they take up the work of reconstruction. At least, while they are getting it well under way. No one seems, however, inclined to express an opinion as to the time during which the trade in this field may continue of such value as to be of importance. Some make the prediction that the older countries will turn to the making of their own machinery and equipment, perhaps modeling some of it after American ideas or taking the best ideas of the day and modifying them. Others think they will be so busy at reconstruction and in other industrial lines that we may continue to hold a big place in the trade.

But why worry about the distant future? It is well enough to look to it for possibilities, but meantime let's not borrow trouble from it. There is plainly before us a very wide field for developing foreign trade in clayworking machinery, and plainly, too, opportunity is knocking. Let us study the situation thoughtfully and strive to make the best of it, the best not only for ourselves, but also for the well-being of the people in the field which it is hoped to develop.

FACTS ABOUT CONTRACTS.

PRACTICALLY every business transaction has for its foundation a contract, and all business law is built upon the law of contracts. It is for this reason that a knowledge of the law of contracts is of benefit to the business man. Such a knowledge will not only effect a saving in legal fees, but it will also serve to eliminate from the busy man's mind that great uncertainty he feels whenever he enters into a contract.

In the following paragraphs attention is given to several cases which are similar to thousands of others that arise every day, and these concrete illustrations will serve to impress the business man with the principles involved in such cases, and the remedies.

Meeting of Minds.

When the minds of both parties to a contract do not meet as to the subject matter of the contract, they can not be said to be in agreement, and, therefore, there can be no contract. An illustration of this principle was given in the case of Falcon vs. Cook. In this instance, Falcon, the plaintiff, sent a telegram to Cook, the defendant, asking for immediate shipment of a quantity of material. The telegram was in code and very ambiguous. Cook interpreted it as meaning a different kind of material than Falcon wanted. Cook telegraphed his acceptance of the order and shipped the material on the same day. Falcon refused the shipment when it arrived at his warehouse. He also started suit against Cook, claiming he had suffered a financial loss as a result of not receiving the right material, and for which he held Cook responsible.

In deciding this case the court held that Cook did not act unreasonably in misunderstanding Falcon's telegram, which was not so clear but that reasonable men might have differed in its interpretation. Since their minds never met on the subject matter of the contract, no contract was formed, and Falcon could not recover from Cook the losses sustained as a result of this mistake.

The facts stated in this case make it very evident that an order for goods should be at least plain enough so that it can not be misinterpreted, for otherwise neither the seller nor the buyer can find relief for losses resulting from such a mistake.

When an Offer Must Be Accepted.

How long does an offer hold good if no time is set within which it shall be accepted? This is a question that has been decided thousands of times in the courts. In order to avoid the possibility of costly litgation as far as possible, it is advisable, whenever an offer is made, to set a time within which the offer must be accepted. The well established principle is that when no time limit is set for the acceptance, the offer holds good until the expiration of a reasonable time. Naturally, the minds of men differ as to what may be termed a reasonable time in each case, and thus arise the sources of controversy and litigation. It is a significant fact that what is a reasonable time must be governed by the facts in each case.

The following is a good illustration of this point: Francis said to Jacobs, "I will sell you a share of B. G. Co. stock for $600," to which Jacobs replied, "I'll give $580." They separated without an acceptance of the offer, and two hours later Francis sent the stock certificate to Jacobs with a bill for $580. Jacobs refused to accept the stock. The court held that Jacobs had a right to refuse the stock certificate because Francis had not signified his intention of accepting the offer. Furthermore, two hours was said to be more than a reasonable time in this case, on account of the rapid fluctuations in stock values. When an offer is made orally, no time being set for its acceptance, and the parties separate without an acceptance, the offer is considered as having lapsed.

On the same principle, an offer by telegram requires quicker acceptance than an offer by letter. When an offer is made by telegram, it is an implied condition that an immediate acceptance is necessary, unless otherwise stated. A mere intention to accept an offer is not enough. The acceptance must be communicated; otherwise, there is no contract. When an offer is made by letter and it is required that an acceptance be sent by return of mail, this is usually construed as meaning, not the very next mail, but on the same day. The contract arises as soon as the letter of acceptance is mailed, and not from the time it is received by the offeror. Thus, where Jenkins mailed his acceptance within the time stated in Jones' offer, Jones was bound to fulfill the contract, although he did not receive the letter until several days later.

A Bankrupt May Become Liable for Old Debts.

Some time ago one Hawkins procured his discharge in bankruptcy, and being of the opinion that all of his former debts were uncollectible against him under any circumstances, he wrote to a former creditor that he would pay the note which he had given, and which had matured. This creditor waited for some time, but realizing that Hawkins had given the promise merely to quiet him, he then started suit to enforce payment of the note.

At the trial, Hawkins argued that there was no consideration for the new promise, and that the discharge in bankruptcy was a valid defense against the collection of the old accounts. The court held that the discharge in bankruptcy did offer a valid defense, but that he elected not to avail himself of this defense, otherwise he would not have promised to pay the note. By giving a written promise to pay the note he waived his defense and again became liable. No consideration was needed to waive the defense, as the note was originally supported by a valid consideration.

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L. A. OSBORNE APPOINTED TO INDUSTRIAL PEACE COMMITTEE.

Loyall A. Osborne of New York, vice-president of the Westinghouse Electric and Manufacturing Company and chairman of the executive committee of the National Industrial Conference Board, has been appointed by the Secretary of Labor a member of a committee on industrial peace during the war.

L. A. Osborne, New York City.

This committee, which consists of five representatives of employers, five labor leaders and two public men, will provide a definite labor program in order that there may be industrial peace during the war, thus preventing interruption of industrial production vital to the war.

WAGES AND COST OF LIVING AS A WARTIME PROBLEM

An Address by Professor Maurice H. Robinson, of the Department of Commerce and Business Administration, University of Illinois. Read before the Illinois Clay Manufacturers' Association Convention, Champaign, March 13.

WE ARE NOW ENGAGED in the greatest military struggle in all history, a war in which the issues involved are none other than the preservation of our national ideals, our most precious heritage from the founders of the great experiment in democracy. To accomplish our national objective the unified strength of the whole nation must be brought to bear, the industrial no less than the military. To fail in our industrial activities at this time would in some ways be more serious than to fail in arms, because it is less difficult to create an effective army than to rebuild or reorganize our industrial system, should it once through internal conflicts or external pressure become seriously and radically demoralized.

Leaving out of account those industrial activities carried on by the government, goods are produced and distributed by independent business enterprises. Some of these enterprises are small, others are large; some are managed by their individual proprietors, some by a small number of men associated together as partners; some by a board of directors elected by the owners, who are legally bound together as shareholders under the laws governing corporations. All of these enterprises are alike in one particular, viz., the owners furnish the capital, organize the industrial and financial operations, hire working men at stipulated wages, pay the bills incurred in the course of production and retain any profits that may be made by selling the goods produced at a price somewhat above the cost of production, that is the sum of the costs for capital and labor.

Wage and Price Changes in Normal and War Times.

Under normal conditions, wages as well as prices change very slowly, wages increasing, prices falling, until the owners of the least efficient enterprise in any particular line are able to retain in their hands as compensation for their services no more than they would receive if they loaned the capital investment at the normal rate of interest and hired out as managers and superintendents, working for others in a similar capacity and with skill equal to that which they have displayed in working directly for themselves. At this point wages and prices remain comparatively stationary, except as new inventions, improvements in processes and in the efficiency of the typical organization disturb the equilibrium of forces and cause changes in both wages and prices until a new equilibrium is established.

Naturally, any war, even one of minor significance so far as the industrial processes are concerned, acts as a disturbing force, throws the industrial machine out of adjustment, and the creaking organization then calls for a diagnosis of the causes and, the causes having been found, an application of the proper remedy. If a small war introduces conditions that throw the machinery out of alignment, perhaps out of gear, what should be expected in case of a world conflict, involving the most stupendous forces and extending to the uttermost parts of the earth? To keep the industrial organization running smoothly under such circumstances is, of course, an impossible task; to permit it to fail in its work at such times may prove more disastrous to the world's future welfare than an equally serious disaster to the organization and morale of the armies in the field. A notable illustration of this fact is furnished by Russia under the rule of the Bolsheviki. Even when supporting her mighty army in the field, so long as her commercial and industrial life was operating in a systematic way, the suffering occasioned by the war was relatively insignificant beside that which her unhappy people have endured or that which is yet in store for them before normal economic conditions can be restored.

Prudence and Discretion Prevented Disaster.

When the war broke out, the United States of America was fairly prosperous, although even then the somewhat rapid increase in prices, a movement beginning as far back as 1897, had promoted a speculative development of industry and an over-extension of credit that was always, like the sword of Damocles, threatening to do its perfect work. The predicted disaster was, by the exercise of prudence and discretion on the part of the rank and file of our business leaders, prevented or deferred until suddenly almost out of a clear sky the bolt came. War was declared and for a moment the commercial world was in chaos. In an instant it recovered its composure and protective measures came fast. Immediately the exchanges were closed to prevent spasmodic as well as concerted movements to dump immense quantities of high-grade securities upon the market at a time when the purchasers of securities were unprepared to absorb them, except in driblets.

Time was thus secured and in this case time was of the essence, for the great flood of securities poured out by Germany was thus diverted into many channels and spread over a considerable period of time. This disaster averted, others, less easy to deal with, presented themselves. In the first place, in view of the enormous forces withdrawn from the ordinary pursuits of a normally organized industrial society, the world awoke to find itself consuming food and other necessities of life faster than it was producing such commodities. Prices of food then began to soar to new high levels. A higher cost of food meant a forced and automatic reduction in real wages and the working men began to demand and to obtain more money wages. More wages meant a higher cost of production, and as a necessary result, less profits or higher prices. And so on until wages and prices should be restored to the normal relationship.

In the second place, war called for new equipment of all sorts, arms, munitions, camps, clothing and other articles which an army must have and which it consumes with almost superhuman avidity. To furnish the equipment for warfare requires the services of a large number of the business enterprises and the capital and labor regularly employed by such organizations cannot be used in producing goods necessary for the support of the civil population. Prices thus naturally rise in all lines of production where the goods or services in question are required for the successful prosecution of the war—in the necessities of living, because the withdrawal of capital and labor must be diverted from its normal uses in order that it may be devoted to providing the tools of warfare.

Rising and Falling Prices in Essential and Non-Essential Industries.

Just as the struggle for goods causes a rise in prices, so the struggle for the use of capital and labor causes a rise in the rate of interest and in the rate of wages. The normal and necessary effect of a war is thus rapidly rising prices in lines of production essential for the prosecution of the war, and falling prices in other lines. With this movement, there is directly connected rising interest rates and rising wages, the two movements proceeding more slowly, but affecting all industries in the same general way. The non-essential industries are thus badly pinched—first, because the prices of goods are certain to fall unless production is cut radically; second, interest is certain to rise, and, third, wages are also increasing.

In the time of war, however, prices, wages and the cost of living are quite generally thrown out of equilibrium by the introduction of certain other factors, which while not absolutely necessary to its conduct are generally resorted to by most governments. It is, of course, evident that the real costs of any war must be born by those living during its progress, except so far as their predecessors may have furnished a part of the fortifications, equipment, food, arms, etc., which are destroyed in its course. But under our present form of society, the government pays its army and navy, purchases their food and equipment and employs a large force of civilians in the various necessary occupations incident to the conduct of the war. To secure funds to pay for goods and services it may borrow, or tax, or borrow and tax.

Providing Funds to Meet War Expenses.

To what extent a government while at war may wisely rely upon taxation to provide funds sufficient to pay the expenses of the war is always a delicate question and one on which opinion is divided. This much may be said with entire confidence, governments err by relying too much upon loans rather than too much upon taxes. The immediate result of resorting to loans is an extension of credit, because many subscribers to the government bonds borrow from the banks, pledging the bonds purchased or other property as security for the loans. At the same time the banks themselves patriotically subscribe to the loan and these two transactions, borrowing from the banks and investments by the banks, increase the volume of bank notes and of deposits and thus indirectly the government borrowing is a powerful factor in causing the general level of prices to rise.

In the use of credit financing Germany has proved herselt to be an adept disciple of John Law, and all of the other countries have relied too much upon loans. Fortunately, England and the United States have each proved themselves skillful in devising ways and means for increasing the revenue of the government by taxation and thus preventing a part of the rise in prices that otherwise would have occurred. The English government was embarrassed in its conduct of the war earlier than ours by the problems thus presented for solution and, therefore, appointed a committee of the House of Commons to investigate and report. During the month of December, last, the committee reported as follows:

"The latest statistics show that sixteen articles of the former (consumables) have recorded an average increase of 105 per cent and the suggested rise of 10 per cent in wages is not over-stating the case. But whatever the extent, the committee has no doubt that the chief causes are the expansions of credits during the war, the demand for commodities exceeding the supply and the inadequacy of government action to control prices, increases of wages and consequent increase in the cost of production, increases in the rates of profit and unfavorable rate of exchange in some countries from which the supplies are imported."

The Reasons for Rapidly Rising Prices.

In the list of causes responsible for the rapidly rising price level, the inflation of credits is given first place, while the scarcity of commodities due to the withdrawal of labor and capital for purposes of war service is relegated to a subordinate one. One other aspect of the question should be noticed. At the outbreak of the war there was in this country somewhat less than two billions of gold.* Immediately thereafter gold began to pour into the country at an unprecedented rate in payment for munitions, food, equipment and other articles of trade and commerce sent to the warring nations. On the first of January, 1917, the total stock of gold in the United States had mounted to $2,864,800,000, while on January 1, 1918, it was slightly over three billions.† And since President Wilson on Sept. 10, 1917, gave an order that no gold should be exported without permission from the government, it is probable that the vast stock of gold will be held in this country during the continuance of the war.

We have thus three great factors operating to force prices upward; first, a relative shortage of goods; second, an inflation of credit, and, third, a rapid increase in the stock of gold. The first of these factors affects the various lines of goods with varying force and, consequently, some lines rise rapidly, others remain stationary, while others fall. The second and third factors affect the price of all commodities in the same way, causing the general price level to rise.

(Continued on page 582.)

GERMANY AND THE FOOD QUESTION.

A loyal United States citizen of German birth, who has bought liberally of Liberty Bonds and Thrift Certificates, recently made an illuminating statement concerning stories that have been appearing from time to time on the food shortage in Germany and the effects of the blockade.

"It is folly to place too much confidence in Germany's food shortage," said he, "as a factor to bring peace. I was a laborer in Frankfort for twelve years before coming to the United States, and my father before me also was a laborer there. The pay he received and the pay I received was not generous enough, even in the most prosperous times, to provide us with half the dainties with which the American workman's table is provided.

"The German workman is accustomed to short rations. Here in America we read that a German family is limted to so many pounds of potatoes a week and so many ounces of butter and bread and sugar, and we say, 'That means the war can't last long; nobody can live on that.' On the contrary, Germans can live on these rations and have been living on them for years.

"Unless I am much mistaken, Germany will be able to stagger along, for the simple reason that Germans never were heavy eaters ,except those of the well-to-do class. The German workman never was well fed when I lived in Germany.

"The blockade may have its effect, but the only real way to defeat Germany is by force of arms. That is why I have contributed my share of money to help win the war for the United States. I know what German fare means. I came to this country to escape slow starvation, low wages and poverty. I have been better fed and better clothed by far since coming here, and I have been able to save money and keep square with my fellow man. I wouldn't go back to Germany, and I don't want any Germany over here. If my savings can help defeat the German plan of life, I shall feel that I am doing a bit in the interest of righteousness and square dealing. I intend to let the government have every cent of money I can spare, for democracy has done a million times more for me since I have been here than the German plan did for all the generations of my laboring family."

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*$1,880,167,000, January 1, 1913.
†$3,040,500,000.

SALESMANSHIP IN THE CLAY INDUSTRY.

An Analysis of the Selling End of the Various Branches, With Suggestions as to Best Methods of Creating a Larger Demand and Better Marketing Conditions.

FOR some time now the editorial staff of The Clay-Worker has been concerning itself with the subject of salesmanship as a factor in the progress of the brick industry. We are recognizing today as never before the fact that salesmanship is one of the important factors in industrial progress. To simply make what the community or the country demands and not put forth any special effort at salesmanship or to enlarge or increase the demand is to make slow progress. The real progress of today is made by cultivating and developing the market for what one has to sell. This applies even more emphatically in the clayworking industry than in many other lines, because brick goes largely into home building and the encouraging of a spirit in the people of the country to build more and better homes not only offers possibilities for materially enlarging the brick making industry, but it is a good service to the country as well. for the better the people of the country are housed the better are the people. Therefore, to promote an increased use of brick is not only a good business proposition, but is really a public benefit.

Analyzing this subject of salesmanship and its importance in connection with the more extensive devlopment of the industry one is impressed with the idea that the first essential is to determine who sells the product, and who may be used in this selling game to advantage? The first question is, who sells the product? Who is it that does the marketing of the great part of the brick produced? Is it done mainly from the office of the brick plant itself direct to consumer, or to contractor, by special agents or by dealers in building material?

Common Brick.

Taking the biggest item first, that of common brick, the sale and distribution of it is more or less localized because it is a low priced product. Evidently, therefore, the majority of the common brick are sold by the manufacturer or some one directly in his employ. Still we find common brick sold by the retail dealer in lumber and building material, we find it sold sometimes by special agents in the larger cities and occasionally by canvassers employed on a commission basis. Also we find some unusual conditions where river transportation makes it practical to distribute the common brick quite a distance from the point of origin, in which case there is often two selling tasks, one from the main office and one by distributing agents. It is evident, however, from a canvass of the industry, that the majority of common brick are sold by the manufacturer. The question is, what percent is sold by others and what is the cost of making sales in this way as compared to making them direct? Also is it practical to materially enlarge the sales through developing more activity on the part of agents and dealers, or can this increased business be done by putting salesmen on the road from the plant itself to make the sales direct? These are questions that will be influenced largely in each case by local conditions. It should be studied carefully, however, because one of the essentials to the successful pushing of business is to find those channels through which it may be pushed and the volume enlarged most readily at the smallest cost. Therefore we recommend this subject for careful analysis and study by every maker of common brick.

Face and Ornamental Brick

Face brick, enameled and ornamental brick and architectural terra cotta, being higher priced products are distributed over a much wider territory than common brick, consequently it is but natural to expect the agent and the dealer to enter as more important factors in the marketing of these.

That the face brick dealer specifically is quite a factor in this trade we have evidence in the fact that there is a face brick dealers' association as well as a face brick manufacturers' association. The two have in a way been co-operating together. The thing the manufacturer should analyze here is, who markets the greatest percentage of the product, and what does it cost? It should be easy enough for each individual manufacturer to determine from his books how much of his product was sold direct, how much through special agents, and how much through dealers in building material. Dealers in lumber and other building material often carry samples and sell face brick as well as common brick in the smaller towns and cities, while in the larger cities there is usually a resident agent or dealer. One idea that suggests itself here as being worthy of attention is that of the possibility of stocking the retail dealers serving the smaller cities and towns with face brick pretty much as they stock up with other material so that it may be on hand ready for prompt delivery and its being on hand may be an inducement to the purchaser. There are expenses of handling involved here which will have to be weighed against possibilities of increased trade, and perhaps it will

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Are You Going to Build a Home or Merely a House?

In building a home, a man strives for four things—comfort, durability, economy, beauty. Americans have lived successively in Caves, Wigwams, Log Houses, Shanties and Frame Houses. Each of these houses were at one time considered the highest type of residence, and each protected the owner from the weather; even a wigwam will keep the rain out, but people are now coming to realize that these houses do not fill the requirements and that comfort, durability, economy and beauty, can best be secured in HOMES OF BRICK AND TILE.

If you merely wish to build a house, anything will do, but a HOME can only be built of Brick or Tile.

BUILD WITH BRICK

Georgia - Carolina Brick Co.

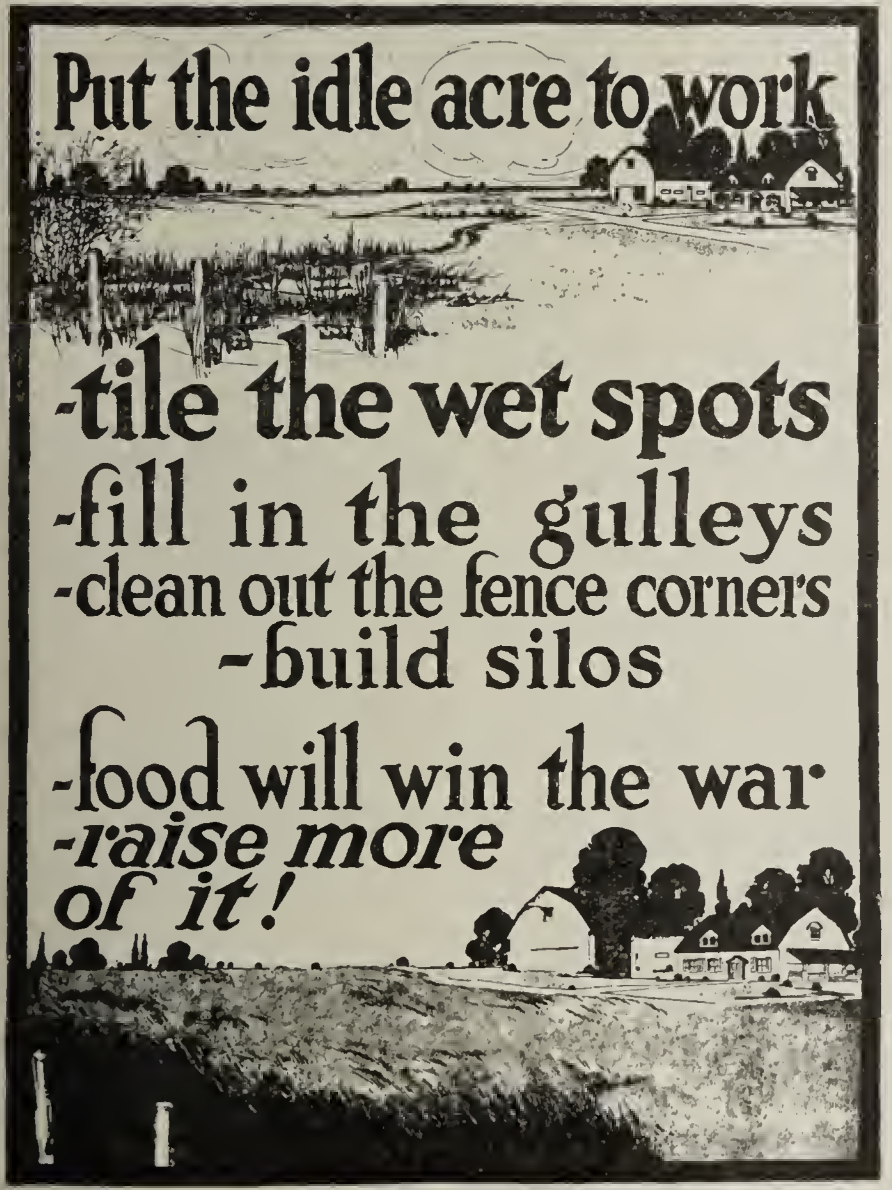
418 Jackson St. Augusta, Ga.

An Effective Ad Used to Boost Brick Sales.

take a series of experiments to determine the possibilities of this line of effort in enlarging the trade in face brick. Another question for the face brick manufacturer is that of the chances for improvement by putting salesmen on the road to cultivate and develop trade through the channels of retail dealers in building material and architects. The question is whether the more extensive work along this line will prove better than to take another line, that of inducing the resident agents in the different cities to cultivate the surrounding territory on a profit-sharing or commission basis. In a measure the ideas that apply here to face brick apply also to enameled and ornamental and to architectural terra cotta. The object at present is not to set forth and recommend any specific line of effort, but rather to institute an inquiry to set the trade thinking and to develop suggestions which may lead in time to a conviction that certain lines of effort will return better results than others. What we are after is to develop the selling end of the business, and to do this successfully the first essential is to find out through what channels this can best be done.

Sewer Pipe and Drain Tile.

In sewer pipe and drain tile an investigation of the channels through which it is marketed and reaches the consumer shows that in the larger cities sewer pipe is sold either direct by the manufacturer or by resident agents who carry stock on hand. In the smaller cities and towns and in serving the country trade the retail lumber dealer is often quite a factor in selling both sewer pipe and drain tile. It is quite a common thing to find these in the stock of lumber yards, and when material for a house is sold the sewer pipe required for drainage goes along with it, and when a tract of land is to be drained the local dealer carries a stock of drain tile ready to supply the needs. Sewer pipe and drain tile are items that are fairly well standarized and can be carried in stock in advance of orders, consequently often distribution may precede sales. The distribution through retailers really calls for salesmanship from the office of the manufacturer, either direct by mail or by putting salesmen on the road. The question here, then, is how much is sold direct by mail, how much by traveling men covering the territory, and which is the more effective? The sewer pipe trade is one line that has shown practically no depression at any time, and should increase in volume wonderfully under a year of active building, especially if the right order of salesmanship is instituted and pushed vigorously. The drain tile market fluctuates considerably. A few dry seasons result in depression, while wet seasons and prosperity among the farmers encourages a larger consumption. Here it would seem that some means should be devised for figuratively cultivating the farmers with drain tile literature. Whether this can best be done direct by the individual manufacturers, through an organization of manufacturers cooperating to distribute, or through some campaign to local dealers in drain tile is a matter that needs determining. The indications are at present that the best direction for an educational campaign would be through organization and co-operation in distributing literature to develop an interest in tile drainage. Then will come the question of salesmanship, of whether the sales may best be made by mail, by putting men on the road. And whether these men who travel should canvass the farm trade or the dealers in building material, are things that can only be determined by experiment and even then will perhaps be governed in different localities by existing conditions.


Put the idle acre to work
-tile the wet spots
-fill in the gulleys
-clean out the fence corners
-build silos
-food will win the war
-raise more of it!

This Poster Awakened the Farmer to the Need of Tile Underdrainage.

The Fire Brick Product.

The fire brick product seems to be handled quite largely by direct sales from the fire brick manufacturer to the consumer. This is especially true of the larger consumers, like the iron and steel industries and other metal workers on which the industry depends for its biggest volume of business. There are, however, various other agencies. For one thing many fire brick for boiler furnaces and furnace linings are sold to or through machinery houses. It is a known fact that in the export trade when a machinery concern sends out a boiler or other equipment that calls for the use of fire brick or block, it is a general practice to ship this brick right along with it, and in order to be prepared to do this the machinery manufacturers must buy and keep a supply of this product on hand. Therefore, while the sales to the machinery house itself may be made direct by the fire brick manufacturer the ultimate consumer buys indirectly through the machinery house. It seems, too, that quite a volume of the fire brick products reaches the consumers through this channel. Then for grate and fireplace linings and flue linings we have the dealer again. The mantel and tile people in the larger cities act as dealers for the grate and fire place linings, or rather they buy it and use it themselves in setting the grates. The flue lining is a part of the original house construction and is generally supplied by a local dealer, who, in the larger cities, may be a dealer in sewer pipe also, while in the smaller cities and towns it is usually the retail dealer in lumber and building material. Here there seems a possibility for great development, especially in flue linings by industrious cultivation. The question is, where and how? We find in some sections of the country co-operative organizations supply literature to the retail dealers on the subject of chimney building which seems to be a good line of effort. However, every possible channel of trade development in connection with fire brick and other brick and clay products should be studied and the question of who sells, and how, should be analyzed with a view to determining where and how the trade may best be further extended.

Vitrified Paving Brick.

In the vitrified paving brick industry the great bulk of the sales seems to be made direct, and through organizations for the issuance of literature and general boosting quite effective results have been obtained so that this industry has prospered ing. There has been some employing of agents in the larger cities and the question is, can the agency idea of selling be developed advantageously? Can more and better results be obtained from putting more traveling salesmen on the road, or is the business moving satisfactorily with the present system of general boosting and the efforts being made direct by manufacturers in the marketing of their product? The paving brick industry seems to have developed more of the spirit of progressive salesmanship than any other branch of the clayworking business, for which it is to be commended and may well be studied. The same methods that sell paving brick may not be applicable in detail to the marketing of other clay products, but certainly an industry which has made the kind of progress shown here will furnish some interesting and valuable ideas to any other branch of the clay working business, though those ideas may need modifying to adapt them to other specific needs.

Make Marketing A Live Issue.

The important thing for every branch of the clayworking industry is to make a live issue out of the matter of marketing the product. To do this it is essential to make an analytical study of the situation, to figure out who it is that sells the product, and if the sales are effected by a number of different people through varying channels, to study each carefully, note the results both in quantity and the cost of selling, to the end during the dull periods better than any other line of clay work that eventually each and every man in every branch of the clay working industry may be able to determine where he could put forth money and enterprise advantageously in livening up and extending the market for his product. It is in the marketing of the product that we lay the ground work for progress in the industry, and we hope that during the new year this phase of the brick business will be given more attention than has ever been shown it in the past.

THE BUILDING INDUSTRY.

The building industry is one of immense magnitude when we consider it as a whole. It involves not merely brick and tile, but lime, cement, hardware, flooring and millwork, nails as a special item, glass, paints, and finally architects, contractors and workmen themselves. So, taking it in the aggregate, especially when we consider it as a national institution and not a local business, it is an industry of wonderful magnitude. It is an industry of too much magnitude and importance to be recklessly sacrificed or carelessly neglected because the country is at war. For it is one of the essential industries of the country.

One of the difficulties with it in the present situation is that it is made up of a multitude of units. Some estimate the number of units above 200. Then in addition to the various units of industry furnishing materials and ideas for building, there is the trouble that nearly every man contemplates generally the building industry as a local proposition instead of viewing it in a nation-wide light.

There is a meeting being promoted in New York with a view to bringing the different units of the industry into more harmonious action to promote the welfare of the industry and keep it as active as is consistent with the war activities of the government. There is plainly room to keep building alive without sacrificing anything of our war effectiveness. Moreover, there is a need to preserve this industry as well as others, that the country may prosper and progress, and the various lines depending upon it should be kept alive and intact for effective use when the war is over and they are more urgently needed. So let us give thought and lend a hand wherever practical to help keep the building industry in good shape. Moreover, we may add as a sort of postscript that the outlook is improving and if the transportation situation can be cleared up business in building operations ought to do fairly well during the spring and summer.

Written for The Clay-Worker.

NOTES FROM DIXIE LAND.

MEMPHIS FINDS the spring building outlook a little more favorable than first expected. Despite war conditions and a scarcity of labor in many lines, the strong agricultural potentialities and necessities of the Mississippi Valley bespeak a supreme effort and coupled with this will be a reflected activity in other lines, building among them. True, for the last three months in most of the Southern cities as in other parts of the country, building figures fell off tremendously, but the hard and unprecedented winter evidenced the fact the great need for modern buildings, new ones and remodeled or modernization of old structures with a view to the conservation of heat, the comforts of modern life and, of course, economy as far as consistent with the results. The Memphis Builders' Exchange is now on an active campaign for 300 members; they have moved their quarters from the old location in the basement of the Goodwyn Institute to sumptuous appointments in the News-Scimitar Building, corner of Madison and South Third street.

Brick firms in the office buildings and in the manufacturing sections report a considerable inquiry locally and out of town. Clay industries, numerous in Tennessee and Kentucky, are busy and using every effort to corral available help. The pottery concerns are also active. At Nashville the government is bending every effort at Hadley's Bend on the Cumberland, twelve miles out, for a big powder plant, to be built in units, and 7,000 to 10,000 people will be engaged here at once. A commissary hotel, by Eastern capital, is going up and 100 plumbers are being called for.

New Orleans a few days ago laid the corner stone for the new Elks Building. Little Rock is to erect a handsome new church in lieu of one that burned. Memphis has several hospital, school and theater jobs of consequence in prospect. Residential construction at all these points is promising.

Clarence Devoy of J. A. Denie & Sons Co., building material people, is chairman of the membership committee of the Builders' Exchange at Memphis, with fourteen captains under him. The membership has already expanded to 109 and 300 is the number aimed at. A. G. Fields is general secretary of the exchange. Most of the fourth floor of the Scimitar Building is occupied.

Memphis Brick Supply Company report a good inquiry on fancy and common brick.

J. C. Lovelace, building supply agent, has given up his office in the Scimitar Building and gone with the Fischer Lime and Cement Company in its sales department. Mr. Lovelace is a pioneer in the building material trade of Memphis, being for many years secretary of the Denie company. He states that outlook in Memphis territory is very fair, worldwide conditions considered. They are handling, besides cement, plaster, lime, etc., a very extensive line of terra cotta products, fire brick, sewer pipe, etc.

The Johnson-Porter Clay Company at McKenzie, Tenn., is busy at its clay mines near there and in Henry County, shipping cars of clay almost every day. They are securing all available labor and maintain their sales office at McKenzie, Tenn.

The Nashville Pottery Company at Nashville, Tenn., and other clay and brick interests in the capital city are active and alive to the $100,000,000 powder plant and other developments promised in an industrial way there.

A. J. Dyer, of the Nashville Bridge Company and a civil engineer of wide prominence, has just been elected president of the Nashville Chamber of Commerce.

A. J. Cook & Co., Decatur street, Memphis, report a good April trade in all building materials and terra cotta and fireproofing materials in first-class demand. They have equipped during the season some magnificent buildings in Memphis in these lines.

The Memphis Paint and Varnish Association is an important new local organization. O. G. Allen, Campbell Glass and Paint Company, president; J. D. McDowell, Tri-State Paint Company, vice president, and R. B. Lanman, agent of Pittsburgh Plate Glass Company, secretary.

There is talk of a large new theater in Memphis soon. The site contemplated is announced to be at Main and Adams. The Loew vaudeville interests of New York are back of the proposition. The Orpheum Theater circuit, Martin Beck, of New York, managing director, are also said to contemplate a new building.

The Goodbar Building for the Union Motor Company, at Monroe and Third, Memphis, is under construction, much handsome terra cotta and fireproofing appearing in the building. J. W. Crawford, contractor.

E. J. Pearson & Co., contractors, have about completed the Hamilton Building on South Main street, occupied partially already by Landres & Co., a New York ladies' wear store. This four-story structure presents a beautiful specimen of white and cream brick and terra cotta work, an old building rebuilt and restored with much elegance, steel reinforcements and every modern fitting, it is one of the most artistic buildings on the street.

The addition of brick and remodeling of the Sacred Heart Academy at Helena, Ark., is one of the contracts of the season in which Memphis men are at work. H. J. Harker of St. Louis is the architect. J. J. Griffin of St. Louis, engineer. D. M. Crawford & Co. of Memphis, contractors. DIXIE.

WHY EVERY AMERICAN CITIZEN SHOULD BUY A LIBERTY BOND.

"When the war's costing Uncle Sam $1,000,000,000 a month, what's the good of my little old $50 bond? Fizz, bang!—it's gone. What's the use? I might as well buy myself a cheese sandwich and give the change to the waiter."

But you are wrong, Mr. Conscientious-Objector-to-Being-Separated-from-Your-Coin, when you say that. Listen!

Down comes a German shell, crash, upon an American trench. A dozen of the boys fall, bleeding, into the mud. The stretcher bearers rush forward. "Thank heaven," says the lieutenant," for that negro barber shop porter back in Chicago who bought that $50 bond. Tetanus killed thousands of poor fellows back in 1915, but we don't have to worry. His little bond will keep 139 of us safe from lockjaw."

At the first aid dressing station the nurses were busy. "That's the 160th first aid packet I've applied this morning," said one. "How many lives will they save? It's wonderful to think they all came from one $50 Liberty bond. I understand a little waitress back in Illinois paid for it."

At the field hospital the surgeons had their hands full. "Got enough ether?" asked the major. "Sure," replied the captain. "A Polish laborer back on the west side in old Chicago did that for us with his $50 bond. Means enough anesthetic to make 400 operations painless. And as for bandages, Mary O'Grady's $50 has supplied enough to tie up 555 wounded hands."

Out in No Man's Land the soldiers, lying in the hot sun, began to drink the dirty water in the shell holes. "We should worry," said the corporal. "That $50 Liberty Bond purchased by little, lame Georgie Browne, who can't be a soldier himself, will keep 666 of us big huskies safe from typhoid here on the firing line. And as for smallpox, one baby bond means immunity for 1,000 soldiers."

But, Mr. Conscientious-Objector-to-Being-Separated-from-Your-Coin, if you really want to help win the war, buy more than one $50 bond. Their power grows faster than their denominations.

Three $50 bonds, for instance, will fully equip an infantry soldier for service overseas. Or, it will feed him on Uncle Sam's rations for twelve months. Four of the little $50s—any small office can contribute that many—will buy a cavalry horse or a mule for the ammunition train, or to haul a water cart of a combat wagon.

Six of the baby bonds will not only equip a soldier in full, but will feed him for a year in France. Or they will buy a motorcycle for a machine gun company. Eight $50 bonds will buy an X-ray outfit. Ten of them, the combined contribution of ten stenographers or clerks, will supply the quota of bicycles for a headquarters company of an infantry regiment. Sixteen of the little bonds would mean four big, strong mules to pull an ambulance.

Bonds to the amount of one thousand dollars will send to the front an X-ray outfit complete, or six cases of operating instruments for a base hospital, or furnish automatic pistols for the men in a rifle company or a motor power rolling kitchen or eight ration carts.

If the employes in some small shop want to send to the front the fine, big horses that are required to draw a gun of the ammunition train, all they have to do is to get together and subscribe for twenty-four of the $50s. They will do the work. Fifteen hundred dollars' worth of bonds will provide a motor ambulance or a five-passenger motor car for a machine-gun battalion. Forty of the little contributions—they are within the reach of every wage earner—will buy a motor truck or supply ration carts for a whole infantry regiment of more than 3,000 men. Or $3,000 worth will furnish rifles for a field artillery battery or supply horses for a field signal battalion. If eighty of the $50 bonds are put together the result is a big tractor to haul supplies and guns. A hundred of these small bonds, $5,000 worth, will send to the front a Liberty truck, or seven Lewis guns, or equip with rifles a whole company of infantrymen.

Seven thousand dollars' worth of bonds means a new training aeroplane, and $9,000 worth—180 of the $50 bonds put together—mean a new observation balloon to watch Fritz's movements and prevent surprise, or will provide enough rolling kitchens to feed a whole field artillery brigade.

What Your Money Will Do for Your Fighting Forces.

Here's what your $50 bond will buy: Trench knives for a rifle company, twenty-three hand grenades, fourteen rifle grenades, thirteen cases of surgical instruments for enlisted men's belts, ten cases of surgical instruments for officers' belts.

What a $100 bond will do: Clothe a soldier, feed a soldier for eight months, provide five rifles, provide thirty rifle grenades, provide forty-three hand grenades, provide twenty-five pounds of ether, buy 145 hot water bags, buy 2,000 surgical needles.

Here's what your $500 will furnish: Bicycles for the headquarters company of an infantry regiment.

What a $1,000 bond will do: Buy one X-ray apparatus outfit operating instruments for a base hospital, furnish pistols for all men in a rifle company, buy one rolling kitchen (motor), provide eight ration carts.

Whittling down the wheat menu is now the popular pastime of the food administration.

KENTUCKY OUTLINES WORKING PLANS.

A MEETING OF THE KENTUCKY CLAY PRODUCTS ASSOCIATION was held in Louisville Friday, April 12, at which earnest attention was centered upon the working out of plans for local organization and better co-operation generally among the brick manufacturers and other clayworkers of the state.

The plan as outlined is to take a map of the state and divide it into three districts and strive to get all the people together at a meeting in each of these districts during the spring and summer. The plans contemplate holding one in Lexington for the eastern end of the state, one at Henderson for the western end, while those in the central part of the state will have local meetings at Louisville. The idea is to have local organizations and meetings as frequently as once a month if necessary, while once a year there will be a state meeting, presumably at Louisville.

The Louisville section is already fairly well organized and one local meeting during the past year was held at Lexington. It is the purpose, however, for President H. C. Cramer of Lexington, in co-operation with Secretary J. Crow Taylor at Louisville, to have a meeting soon of the Kentucky clayworkers of the eastern end of the state.

Also it is planned to take up with F. C. Klutey, first vice-president at Henderson, in the same manner the work of calling a western group meeting at Henderson. At Louisville there is a vice-president, Isaac Tyler, who will preside over any local gatherings, and other officers located at Louisville are J. T. Howington, treasurer, and J. Crow Taylor, secretary.

At the meeting in Louisville it was decided to retain the old offices as they had not yet held a full year and also to try and obtain copies of an address recently delivered by R. S. Kellog at a meeting of secretaries in Chicago on the subject of the "Legitimate Functions of Trade Organizations." Copies of this, if they can be obtained, will be sent out to all the members of the trade in Louisville as part of the organization propaganda.

The officers and directors of the Kentucky Clay Products Association are as follows:

Officers—H. A. Cramer, Lexington, president; F. C. Klutey, Henderson, first vice-president; Isaac Tyler, second vice-president; J. T. Howington, Louisville, treasurer; J. Crow Taylor, Louisville, secretary.

Directors—F. C. Klutey, Henderson; M. J. Bannon, Louisville; H. C. Cramer, Lexington; H. T. Miles, Maysville; A. P. Hillenbrand, Louisville; A. T. Kleymeyer, West Point; W. H. Hall, Maysville; Isaac Tyler, Louisville; G. R. Ermann, Calhoun.

KENTUCKY NEWS NOTES.

H. C. Cramer of the Lexington Brick Manufacturing Co., Lexington, says that, while business locally in Lexington has been rather dull, they have had a very good out-of-town trade and have been shipping brick right along and they were planning to get some of their plants started about the first of May. They had about a million brick left on hand, and have recently sold about a million, which will clean up the stock on hand, so they expect to operate enough to supply the current needs of the season. Their main trouble at present is to get some smokeless coal to help in their burning.

Andrew Hillenbrand of the Hillenbrand Brick Co., Louisville, says they have not yet started up this spring. They have probably 200,000 brick on hand and will sell these out before starting in to make more. The trade in Louisville is rather slow, but the country districts report business fair.

The R. B. Tyler Co., Louisville, say that the face brick business is comparatively slow at the present time. Their best run of trade these days is in roofing, of which they handle quite a line.

The Coral Ridge Clay Products Co., Louisville, report business rather slow in Louisville, but there is an out-of-town demand that keeps them busy, so they are running right along and their main problem is to get help enough to fill their orders.

THE BALL ENGINE COMPANY'S NEW ENGLAND REPRESENTATIVE.

E. L. SPARKS, LATELY INDUSTRIAL EDITOR OF ENGINEERING NEWS-RECORD, has been appointed New England representative of the Ball Engine Co., manufacturer of Erie revolving shovels.

Mr. Sparks is a graduate of the Central Manual Training School of Philadelphia. His first construction experience was with the M., K. & T. in 1902, on the Oklahoma City extension. After working awhile with the Big Four on construction of the Hillsboro-Mitchell cut-off, he joined the engineering staff of the Southern Pacific Railway in 1904. He did a great deal of pioneer work for the S. P. in Navajo Indiana Reservation, New Mexico, and in the Northern Yaqui River Valley, state of Sonora, Mexico, on exploration surveys of the upper Yaqui Canyon.

In 1906 Mr. Sparks was appointed assistant engineer of maintenance of way on the Tucson Division, in charge of ballast work, drainage and building construction. In 1907 he joined the construction forces of the Chicago, Milwaukee & St. Paul Railway in Montana, as resident engineer, in charge of heavy work east of Miles City, Montana.

At the close of the construction, in 1909, he rejoined the Southern Pacific, making a railroad reconnoissance of the east coast of Mexico from Matamoras to Tampico. Later as locating engineer of a new line across the Navajo Reservation, and construction engineer for the reconstruction of the Twin Buttes Railway.

Mr. Sparks came east in 1914 and joined the staff of Engineering Record as a writer of advertising for construction equipment. He remained with the paper after its consolidation with Engineering News, and was appointed industrial editor of Engineering News-Record in 1917, resigning that position to become New England representative of the Ball Engine Company.

FRUITS OF OPEN COMPETITION.

What was first called the open-price method, but is now termed open competition, consists in the main essentials of everybody reporting their sales and the prices obtained regularly to some central agency or bureau, from which point the information is disseminated to other members. This idea has been put into practice in the clayworking industry in some localities, in coal and lumber and various other industries, and has done service long enough now that we can begin to understand something of the fruits that may be expected from such efforts.

One of the first of these is, that it has quite a beneficial effect in reducing, if not entirely eliminating, what is known as ruinous price-cutting. It doesn't entirely eliminate price cutting, but it has a good moral effect because the knowledge that a man's prices are to be made public to his fellow man leads to a natural hesitancy about making radical price sacrifice to get business.

Another good effect is noticeable in that it makes toward greater efficiency in business methods. The man who is not able to meet competition when prices of his competitors are open before him immediately begins casting about to see what is wrong in his business organization, and the usual result is to improve methods and reduce costs, in other words, to develop greater efficiency.

There are other fruits of open competition, but so far the two items set forth here have seemed to offer enough in the way of returns themselves to justify more getting together in communities and following the idea of open competition.

SHELVING THE WHEELBARROW.

THE wheelbarrow, that well-known implement of the brick yard, is losing some of its grip on the industry and may go the way of the mule and find itself quite extensively replaced by mechanical conveyors, motor trucks, and other power appliances.

The subject of the wheelbarrow and its possible shelving is of peculiar interest right now because of the scarcity of man power and of help generally around the industries. The wheelbarrow calls for more man power than anything else around the brickmaking plant, and just as man power gave way to horsepower for road wagons, and the horsepower in turn to the motor, so may we argue in favor of replacing the wheelbarrow with mechanical power. The only questions are those of practicability of the application of mechanical power to the handling of brick and clay products in individual cases.

We have had in times gone by some imposing demonstrations of mechanical devices for handling brick into and out of the kilns, special patented devices for transfering entire truck loads of brick. These have had a fair share of attention at convention meetings and in the printed pages of the Clay-Worker.

Then came along the gravity conveyor, which has also become familiar as a labor saving device for handling brick wherever there is enough incline to make gravity serve this purpose. This too has been before the trade long enough to become familiar in many quarters. In passing, however, one feels moved to remark that there is many a plant where these gravity conveyors are needed and could be used advantageously, not only to help out now in the scarcity of labor but as implements of economy even in normal times.

In the advertising pages of The Clay-Worker there has been shown recently an illustration of the Leary Sterling Portable Conveyor, a modern method of handling brick in the yards from kiln to car or into stock sheds with a minimum of labor and a maximum of efficiency, which furnishes an interesting example of the shelving of the wheelbarrow and the putting in its place mechanical power to do the burdensome part of the work of handling.

This type of conveying system is described at some length by the W. J. Leary Manufacturing Co., Buffalo, in an illustrated catalogue gotten out by them of their brick machinery and methods. Their plans call for handling with mechanical conveyors from the time the green brick leaves the machine until the finished product is placed on the cars for shipment, and the same system is used in other industries to an extent to replace wheelbarrows and trucks.

It is things like this which show the trend of events as making for a more general and widespread substitution of mechanical power for man-power as well as for mule-power. The wheelbarrow will always be a useful implement and necessary to the convenience of mankind. But instead of its use multiplying around such industries as the brickyard the tendency is more to relegate it to the incidentals and to put mechanical conveyors of one kind and another in its place for the steady streams of burdensome carrying.

We not only have the different ideas and systems outlined above, but from time to time there has been discussed at convention meetings the subject of electric trucks and motor trucks of one kind and another for local hauling and conveying as well as for delivery to jobs.

In the lumber industry they have gone through this same process of evolution. At one time they had hand push carts, then push trucks mounted on tramways which in turn gave way to what is known as the mule dolly, a truck pulled about the yards by mules or horses. During the past few years they have been replacing the mule with electricity and gasoline for local work on the yards and about the plants. Short easily handled electric tractors take the place of the mules and do the work better at less cost.

In certain lines of clay working we have had something of the same thing. The introduction of electric motor trucks and special type for the short haul work about the plant, that is the moving of material and products from one point to another. Plainly this idea will be extended to include perhaps both electric tractors and gasoline tractors for some of the local hauling done by wheelborrows and hand-trucks.

Meantime other new ideas may be developed. Anyway there is a plainly evident tendency to substitute mechanical power for hand power and to shelve the wheelbarrow for other means of local conveyance around the plant. The man who would keep up to date and get the full measure of efficiency out of his industry should make a thorough study of offerings of this kind to the end that he may select that which will fit it best with his own particular needs, and get away from burdensome hand labor for when the burdensome hand labor can be done by mechanical power it is neither needful nor right to do it by man power.

FLAG RAISING AT HOME OF NEW JERSEY CLAYWORKER.

An impressive flag raising took place recently on the spacious grounds adjoining the home of Charles A. Bloomfield in Amboy Road near Metuchen. Invitations had been extended by Mr. Bloomfield to about a hundred of his friends and neighbors and a large assemblage was on hand for the patriotic event.

The pole, fifty-three feet in height, had been erected on the west lawn of the Bloomfield grounds, and the large American flag was raised by Mr. Bloomfield's grandson, Howard Lundy Bloomfield. As the flag floated in the breeze the spectators sang the "Star-Spangled Banner," a band furnishing the music.

After the flag had reached the top of the pole Mr. Bloomfield made a stirring patriotic address, telling of the historic site occupied by his home. He spoke of the days of the American revolution when Clinton, the British general, was in Perth Amboy, and Washington with the American forces, occupied New Brunswick, the land between these two cities being the "No Man's Land" of that day.

Following Mr. Bloomfield's address there were a number of short speeches by some of the guests and the exercises closed with the singing of "America."

After the ceremonies Mr. Bloomfield entertained his guests in his home, light refreshments being served.

The present price of lumber makes a fine invitation to build with brick.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A New Use for Build With Brick Signs.

Editor The Clay-Worker:

I saw something a few days ago that pleased me very much. A New Haven brick machine going west on the Lehigh Valley Railroad with The Clay-Worker sign, "Build with Brick, the Everlasting Material," displayed on each side of the machine. The writer wishes to congratulate the builders of the old reliable New Haven machine. It is a good example for others to follow—use more of The Clay-Worker's signs. Very respectfully,

PENNSYLVANIA CLAYWORKER.

A Query for Dryer Experts.

Editor The Clay-Worker:

Please enter my subscription for The Clay-Worker, to begin at once.

I would like to get some information about drying stiff mud brick in a soft mud dry house. Can it be done with exceptional clay? My idea is to set the stiff mud brick on end on sheet iron which lays directly on the steam pipe, and have them dry in twenty-four hours. Is this practical? Would like to hear from some experienced brick man as to what he thinks of this plan. MISSISSIPPI.

Pennsylvania Brick Man Proves An Alibi.

Dear Mr. Randall:

I am enclosing with this my fee in the National Association for 1918. Want to tell you that Mrs. Hanley and myself fully expected to attend the recent National Convention in Indianapolis, but man proposes and a Higher Power disposes. Unfortunately, we were both taken down with pneumonia just previous to the convention, and are mighty thankful to be alive and well again today. Our "alibi," therefore, is good, but you can also consider this our written excuse for not answering "present" when the roll was called at Indianapolis, and we hope for better luck next year.

With kindest regards for yourself and family, I remain,

Yours very truly,

Bradford, Pa. WM. HANLEY.

Brick Yard Within One Hundred Miles of Arctic Circle.

My Dear Mr. Randall:

Your letter and the old reliable Clay-Worker reached me here at Nenana, Alaska, after a thirty-five day journey, by railroad, steamship, overland horse sled, and lastly the Alaskan horse sled. It is just 4,300 miles winter trail via Valdez and 5,000 miles summer journey, via Dawson and the great Yukon River from Chicago to Nenana.

How good The Clay-Worker looks to me, after so many years. On opening its pages one comes across the same old familiar ads, talking to the "mudlarks" in the same old way, every one claiming to have the best machine on earth. The fact of the matter is they are all good, which is evidenced by the fact that they are still carrying big space in The Clay-Worker, just as they have done for so many years. Of course, a lot of the old guard, both machinery men and brickmakers, too, are getting well along in years, and many of them have gone where overheated bearings and overheated kilns cut no figure, and where coal has no value.

We have located a very fine bed of clay at this place which, for Alaska, is a wonder. The bed runs in three distinct strata, yellow clay, potters clay and fire clay, and makes a beautiful red, gray and blue-gray brick. While the new government railroad is a prospective customer, we are not sure about developing a trade that will justify a large yard, but we are working on this problem now. This yard will be located the farthest north of any brick yard in the world, being within 100 miles of the Arctic Circle, with twenty-four hours daylight in the summer, and one and one-half hours sunlight per day for December and January. We are just now emerging from a spell of cold weather, during which the thermometer registered from 42 to 64 degrees below zero for four weeks. It is a good thing we have plenty of good stoves and lots of wood. Alaska is a good country for all that.

E. J. HUTMACHER.

Additional Data on the Kiln Question.

Editor The Clay-Worker:

Regarding your short article, "A Question of Kilns," Page 73, of The Clay-Worker for March, I beg to say every phase mentioned therein I have overcome. I have just invented a kiln which burns continuous or periodical, each chamber being self-contained—the fires can be connected with the preceding chamber at will. It will burn any kind of clay products, glazed wares and pottery. Can be burnt muffled, up or down draft, fired from top, sides, bottom and ends.

Consequently, the whole chambers are enveloped with fire. Top and bottom are heated at the same time and the burns are, therefore, even. Any degree of heat can be generated and any speed in burning and cooling the chambers can be attained that the material will stand. It can be filled and drawn from both sides and ends at the same time and is as comfortable for the workmen as an open shed. Every known device and method of burning is incorporated in this kiln and can be used.

It burns either coal, gas, oil or wood at less than one-third the cost of the ordinary round or rectangular down-draft kilns, as no bands of iron are used in the construction. Comparatively speaking, it is as economical for small yards as large yards, and we have no hesitation in saying the whole cost of construction could be saved in one year's operation. The upkeep of this kiln of sound construction would be practically nil. Certain types of continuous and semi-continuous kilns now in use in the United States can be converted to this system, but the ordinary round or rectangular down-draft kilns would have to be rebuilt.

We note from your journal that the clay products industry is third on the list of trades in the United States for coal consumption and that it is the intention of the fuel controller to cut down considerably the amount of coal used in the clay working industry. I unhesitatingly say that one-third of the coal now used would burn in up-to-date continuous kilns all the goods made and burned in the United States at the present time.

Plans and specifications are in the hands of our patent attorneys, Messrs. Allen & Allen of Cincinnati, O., who are applying for patents for us in the United States of America, Canada, England, France and other foreign countries. We are also bringing it before the notice of the fuel administrator at Washington, D. C., so that it can be thoroughly investigated.

We have four different types of continuous kilns, for which patents are applied for in the United States of America, viz., continuous kiln, top fired only; continuous kiln, combined burner and dryer; continuous down-draft kiln, and continuous muffle kiln. The two latter kilns embrace every device used and known in the burning of clay products.

Any question put to us we will gladly answer, and shall be pleased to meet any number of representative gentlemen in the trade, by appointment, at our offices in Cincinnati; produce plans and discuss and explain every feature of the new kilns. Respectfully yours,

Cincinnati, O. H. WEBSTER.

CHAMBER OF COMMERCE RESOLUTIONS.

AT THE RECENT MEETING of the Chamber of Commerce of the United States at Chicago, quite a long list of resolutions were adopted, many of them perfunctory and others in keeping with the patriotic spirit of the times, and some of which have particular interest to the clayworking industry.

For example, in the matter of government control of industries, a resolution urges upon Congress that measures having for their object control of industries be subject to close scrutiny, and that such proposals be adopted only where there is sufficient evidence to make such control essential for helping in the war.

In the matter of plans by states, counties and municipalities for public buildings and improvements, it was recommended that all new undertakings not essential to or contributing directly or indirectly to winning the war be discouraged, notwithstanding that they may be of local importance and of a character which in normal times would meet with every encouragement.

Another resolution asked, not that non-essential industries be listed, but that the essential industries for the conduct of war be so declared. This resolution seems to be out of harmony with public sentiment and the actions of the officials so far announced.

A resolution on the subject of transportation inclines to class highways with waterways, and recommends that trunk highways for heavy traffic be completed where they can be useful in relieving railway congestion. Also, that a policy be adopted assuring co-ordination of railways waterways and highways for traffic service.

To the on-looker it would seem that this resolution pertaining to highways might well have been broadened because local highways making for broader local distribution of freight by motor trucks, thus contributing their share toward relieving railway congestion. In fact, broadly speaking, all highway improvement will contribute materially to help relieve the main inland difficulties of the times, that of insufficient railway transportation.

Resolutions were adopted approving universal military training, and another favoring the effort being made to speed up ship building, and declaring that it is the first duty of the business men and business organizations of the country to do all in their power to assist the Government and the shipbuilding organizations. Concrete ships were given honorable mention and Congress was requested to make an appropriation of $50,000,000 for the immediate construction of concrete ships. Think of it, $50,000,000 for an experiment. We hope the experiment will prove a success, for we would like to see the cement mills taxed to the utmost in this direction that their product might be diverted from other fields in which their material enters but really does not belong, being there because of expert promotion work.

A resolution which aroused much enthusiasm was that referring to the destruction of property, munition plants, etc., by incendiarism, and urging all branches of the United States Government, legislative, executive and judicial, by tireless vigilance, rigorous enforcement, relentless pursuit and prosecution and severe penalties, to visit (to the full limit) stern and prompt punishment upon all persons found guilty of such acts whether they be alien enemies abusing hospitality and presuming upon the national patience, or traitors dishonoring their citizenship.

The shingle folks are still putting up a lot of shoddy arguments for wooden shingles, while the composition roofing keeps gaining ground. Meantime, what about tile, made of burned clay, which makes the best roof of all?

A PUBLIC DERELICTION.

SECRETARY REDFIELD, of the Department of Commerce, in his address before the last convention of the National Fire Protection Association, stated that while our national fire waste is to be deplored, what is more to be deplored is the mental attitude which this fire waste reveals. A correct mental attitude would be reflected by a much reduced fire waste and a hundred other symptoms of thrift. It is evident then that to change mental attitude will affect the fire losses more effectively than to change physical conditions by force of law. It is surprising to what an extent all fires are still looked upon as no more than private misfortunes or visitations of Providence. Only a few years ago, a state fire marshal was vigorously assailed in the editorial columns of a newspaper because he dared to suggest that a visitation of fire should be looked upon as a crime against the community unless there was clear evidence that negligence or design was not present.

A change is taking place in the attitude of our citizens toward fire losses. President Wilson in his recent statement on "preventable fire" struck one of the keynotes of this change be emphasizing that such a fire is more than a private misfortune. "It is a public dereliction." A careful reading of the President's statement shows that he made this part of it apply to preventable fire at any time, adding that "at a time like this of emergency and of manifest necessity for the conservation of national resources, it is more than ever a matter of deep and pressing consequence that every means should be taken to prevent this evil." To say that a preventable fire is a public dereliction is near to saying that a preventable fire is a crime against the state. This statement, coming as it does from a source so prominent should do much in leading people to a correct attitude toward preventable fire.—Fire Protection.

OHIO CERAMISTS MEET AT TOLEDO.

THE NORTHERN OHIO SECTION of the American Ceramic Society met in Toledo Saturday, April 6. The program was preceded by a visit to the plant of the Buckeye Clay Pot Co., where an experimental humidity dryer was of special interest. At the afternoon session Dr. A. F. Gorton, of the Buckeye Co., gave a very interesting account of the result of three months' operation of the dryer working on heavy blocks. A. S. Walden, foreman of the furnace department of the National Carbon Co., in Cleveland, presented a paper treating of the points to be considered in the choice of refractories for various furnace conditions. The material presented was directly based on a large experience in the construction and operation of furnaces of greatly varying types. The charter granted to the local section by the trustees at the recent meeting of the National Society in Indianapolis was presented by ex-President C. W. Parmelee, Dept. of Ceramics, University of Illinois. Professor Parmelee's address of presentation touched on the history and traditions of the American Ceramic Society and the part the local sections are to take in the future development of the organization. A business session provided for a completion of the organization details of the section. Following the afternoon program the members dined together and the meeting adjourned.

This local section draws from a very active field of ceramics and a real live organization should develop from the present preliminary efforts. The officers of the section are as follows: Chairman, E. P. Poste, The Elyria Enameled Products Co., Elyria, Ohio; secretary and treasurer, Bryan A. Rice, The Elyria Enameled Products Co., Elyria, Ohio; counselor, Robt. D. Landrum, Harshaw Fuller Goodwin Co., Cleveland, Ohio.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. APRIL, 1918. No. 4.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Hoo—hum! Spring fever.

* * *

And now the home of the Hoosier is dry.

* * *

The railroads are running better, and the motor trucks are helping out.

* * *

It's a whole lot better to have a surplus of potatoes than a shortage, so on with the war gardens.

* * *

The hollow wall idea in house construction, which used to be passed over lightly, has become a persistent factor of growing importance.

* * *

Well, some of the corn that once made booze is now being turned into edible oil to help out the fat supply, which shows that both corn and chemists are doing their bit.

* * *

The fires of industry must be kept going to maintain a proper backing for that great fighting machine we are building up to make the world a safe and desirable place to live.

* * *

Well, most of the income tax agony is over with for a year now at any rate.

* * *

Labor-saving machinery has always been useful and right now it is indispensable.

* * *

No small boy has yet been heard to kick about the scarcity of and need for economy in the use of soap.

* * *

We may be a bit behind in our own airplane schedule, but we exported to others last year airplanes and parts to a total value of $5,598,218.

* * *

Let us not overlook or forget the need to train youngsters in bricklaying. That will be the great call ahead for men to do the bricklaying.

* * *

The man with the hoe is still in the agricultural picture, but it is the boy with the tractor who occupies the middle of the stage and makes the most dirt fly.

* * *

A German spy in this country is a worse enemy than a German soldier on the battle line, and there is evidence of enough of them here to call for the performance of a stern duty.

* * *

Maybe you can't make people build till they are ready, but you can keep on presenting clay products arguments so that when they do get ready they will use the best building material on earth.

* * *

Russia is not the only country which has suffered from loud-mouthed, ill-advised oratory attended by sneaking German propaganda, but the disaster there is more plainly marked at the present time.

* * *

It is estimated that one-fourth of the industrial man power of the country is in the army and engaged in war industry. With the other three-fourths called upon to shoulder the whole burden of industry it is no time for talking shorter hours.

THE LINCOLN HIGHWAY THROUGH HOOSIERDOM.

Indiana has been doing her bit in the way of improving the Lincoln Highway and present plans indicate that the Hoosier state will hold a high place among the states traversed by this great roadway. Funds have been awarded by the state highway commission to all but two of the Lincoln Highway counties in Indiana. Of these two, one has already completed its permanent construction and the other is reserving a 1918 fund to be added to money available in 1919 to complete the improvement of the road in that county. So the Lincoln Highway through Hoosierdom is getting in pretty good shape and making a pretty good showing.

LIBERTY BONDS.

There is a third Liberty Loan to be floated and it is time for a reminder that while the others have been absorbed, they have not been properly digested, therefore, it is time for us to do our duty by doing better.

The banks and the big financiers can absorb the bonds, but the best results both for government financing and for the public at large is obtained when the bonds are widely distributed among small holders. This is what makes a proper digestion of them. We need the banks and the big financiers to quite an extent in other activities and we all need to share in the absorption of these Liberty Bonds. It is a privilege for a man to own them and whatever sacrifice it is necessary to make to obtain additional bonds brings its own reward to the individual making it. So let us toe the mark and do our duty.

GROWTH OF THE MOTOR TRUCK.

Some idea of the rapid growth of the motor truck or commercial vehicle may be had from the fact that we are now exporting practically as many motor trucks as we are passenger machines. The figures for the calendar year, 1917, show that we exported trucks to the total value of $36,364,733 and passenger cars to the total of $51,982,966. Counting passenger cars, trucks and parts of these sent abroad, the total has been about 100 million dollars a year for three years now, and when we consider that this total is apart from and in addition to the trucks and machines sent abroad with our own army to supply the needs of our own soldiers it begins to give us an inkling into the great part the automobile and the truck are playing today in the transportation of men and material and that they are likely to play in the commerce and industry of the future.

AS TO CURTAILMENT.

There has really been a whole lot of unnecessary agitation about curtailment in the industry both in the matter of curtailing building operations and in curtailing the fuel supply to clayworkers. Following the natural law of supply and demand there has been an automatic curtailment in both these lines that really of itself takes care of the situation and makes unnecessary and superfluous most of the agitation and wrangling that has been going on about it.

There has been a two-sided agitation. One centering around the expressed opinion of Secretary McAdoo that unnecessary building should not be done. This called forth protest and visitations by delegations of lumbermen and others interested in building operations, and regardless of all that was said and done the situation stands just as it would have stood anyhow. Unnecessary building has been automatically curtailed because no man is inclined to build anything that is not necessary, and he would have a hard time getting help to do any other than necessary work of any kind.

In the same way there is a natural or automatic curtailment in the clayworking industry because the reduction of the demand for building operations automatically lessens the demand for clay products. Thus a fuel curtailment is effected without demanding of itself any special agitation or being in reality materially affected by such agitation.

THE CLAYWORKING FAMILY.

The census of manufacturers in 1914, which might be classed as a normal year, shows approximately 100,000 people first and last engaged in the clayworking industry under the head of brick, tile, terra cotta and other clay products. From six to seven thousand of these are proprietors and officials of concerns and the balance are wage earners, clerks, superintendents. One compilation of figures shows a total of both sexes engaged of 114,628, of which 113,267 are males and 1,361 females. This shows as compared to other industries there are very few women and girls employed in brickmaking except in offices as clerks.

In the pottery industry there is shown a total of 27,142 persons of both sexes employed, of which 20,914 are male and 6,228 female, which plainly indicates that the pottery branch of the industry is the only one employing girls and women to any appreciable extent outside of office work. Just what changes war conditions and a shortage of man power may bring about remains to be seen. It will perhaps add somewhat to the list of girls and women entering the industry, but it is not conceivable that they will ever enter the clayworking industry in this country to the extent they have in Europe, nor will they be made to take on the burdensome work that has fallen to the lot of many of the women in the older countries.

CLAY PRODUCTS EXPORTED.

We are building up a very nice export trade of clay products of one kind and another, the total for the calendar year, 1917, amounting to nearly 7 million dollars and being practically three times what it was three years ago. The exports set forth by items in figures compiled by the Bureau of Foreign and Domestic Commerce are as follows:

Building brick	$199,882
Fire brick	4,028,792
China ware	422,641
Earthen ware, stone ware	805,784
Sanitary ware—closets, bowls, lavatories, sinks	323,558
Tiles, except drain	450,442
All other	743,105
Total	$6,974,184

SOME PRICE COMPARISONS.

In the monthly summary of the Foreign and Domestic Commerce of the United States there is one page devoted to what is termed the monthly average export prices of our principal domestic articles which is of particular interest at this time as it gives an idea of what has been doing in the prices of other materials which enter into building construction, that is other building material than brick.

These figures show that the average export price on cement in January, 1917, was $1.75 per barrel, while in January, 1918, it was $2.31; on structural iron and steel the average export price in January, 1917, was $68.60 per ton, while in January, 1918, it was $99.20; lumber, that is boards, planks and deals, were listed at an average of $23.23 per thousand feet in January, 1917, and $39.04 in January, 1918.

Now, the average prices in January, 1917, indicated the first general advance scored by all these items, but it is plain from the figures quoted here that the advance didn't stop there, but continued on all through the past year and at the present time is enough higher than the average of a year ago to make the advance during the year as marked as that which had preceded it.

A study of these figures furnishes a suggestive reminder of two things. First, that in competition with other structural material, it is a mighty favorable time to push brick and clay products, and, second, that there is room for and need of some advance in clay products prices.

THE SELLING FACTOR.

One of the points made by G. C. Mars in his talk on advertising at the face brick meeting was in a question something like this: "Of what avail is it to solve other problems of the industry if you do not sell the product?"

There is a whole lot more to that question than we have been making out of it in the clayworking industry in the past. Almost any review of the industry will show plainly that much more attention has been centered upon the solving of other problems of the industry than has been directed toward selling the product. There is very little satisfaction in making a product if it is not sold, and there is no chance for profit in a commercial way from manufacturing a product unless it is also marketed.

Plainly, the progress of manufacturing methods have been much greater during the past decade and the results have been more apparent than has been the progress of selling methods and the results therefrom. Had selling methods progressed comparably with manufacturing methods the clayworking industry today would be twice its present magnitude.

It may be that manufacturing methods require in the aggregate more thought and attention than is advisable for the selling end, but plainly there exists today a need for the directing of more attention and energy toward the selling end of clay products. There is need for more recogntion of selling as an essential factor in the business.

CURTAILMENT OF NON-WAR INDUSTRIES ORDERED BY THE U. S. FUEL ADMINISTRATION.

As this issue of The Clay-Worker goes to press we are advised by wire from our Staff Correspondent at Washington that the anticipated order for curtailment in all non-war industries, including structural clay products, has been issued by the United States Fuel Administration, as was predicted by our correspondent in the March Clay-Worker, page 439. The immediate effect of the order will not be appreciably noticeable in the clayworking industries, for the inexorable law of supply and demand has already operated to reduce production to about 50 per cent. of normal. The industries named in the report include face brick, paving brick, common brick, terra cotta, roofing tile, floor and wall tile and sanitary ware, all of which are ordered curtailed 50 per cent.; hollow tile, sewer pipe and drain tile, 25 per cent., and stoneware, with the exception of chemical stoneware, is curtailed 15 per cent. Another new order curtails the output of enamel ware 50 per cent.

The percentage of curtailment in each case is based on the average output for the last three years.

The action by the Fuel Administration, which was approved by the War Industries Board, is declared to be the forerunner of similar curtailment of practically every industry considered not vital to the war program. Two important things will be accomplished, in the belief of the Fuel Administration and the War Industries Board. Parts of the plants affected will be converted for war industries where practical, and men, materials and transportation will be made available for war production.

That the production of all building materials eventually may be substantially curtailed was disclosed by the order, which states that whenever the Government departments certify requirements in any of the divisions exceeding the productive capacity of a given district on a minimum basis, such facts will be certified to the Fuel Administration and permits for additional operation may be issued. In other words, when in any given locality there is a demand for building materials in excess of the percentage of curtailment announced, permit may be obtained on application to the Fuel Administration for additional production.

Nathan H. Sloan, a well-known brick broker of Paterson, N. J., has been an important factor in the third Liberty Loan activities. He turned over his offices and devoted a good deal of his time to preparations and has been active since the drive started. He is a member of the publicity committee and was a member of the committee that built the Liberty Loan Bank. A very public spirited man, he has responded heartily to all the requirements of the situation and has been potent in the development of the present organization for the city.

Table of Contents

Solving the Nation's Transportation Problem......... 533
Cost of Brick Roads........ 537
Organization for Common Brick Men................ 538
The Clayworkers' Coal Pile. 539
The Shingle Roof Indicted.. 539
Burning Clay Wares........ 540
The Organization of our Ceramic Resources for National Service.......... 542
Feeding the Men in Training 543
Economic Methods of Heating Clay Storage Sheds... 544
Oregon Clayworkers Assemble in Portland........ 546
The Application of Producer Gas to Perodic Muffle Kilns 548
The Wider Field for Machinery 549
Facts About Contracts...... 551
L. A. Osborne Appointed to Industrial Peace Committee 551
Wages and the Cost of Living as a War Time Problem 552
Germany and the Food Question 553
Salesmanship in the Clay Industry 554
The Building Industry...... 556
Why Every American Citizen Should Buy a Liberty Bond 557
Kentucky Outlines Working Plans 558
The Ball Engine Company's New England Representative 558
Fruits of Open Competition. 558
Shelving the Wheelbarrow.. 559
Flag Raising at Home of New Jersey Clayworker.. 559
Chamber of Commerce Resolutions 561
A Public Dereliction........ 561
Ohio Ceramists Meet at Toledo 561
Curtailment of Non-War Industries Ordered.......... 576

CORRESPONDENCE:

Brick News From Southern Indiana 545
Pacific Coast News......... 547
News From Dixie Land.... 556
Kentucky News Notes...... 558
A New Use for Build with Brick Signs............. 560
A Query for Dryer Experts. 560
Pennsylvania Brick Man Proves an Alibi........... 560
Brickyard Within 100 Miles of the Arctic Circle...... 560
Additional Data on the Kiln Question 560

EDITORIAL:

Current Comment.......... 574
The Lincoln Highway Through Hoosierdom...... 574
Liberty Bonds.............. 574
Growth of the Motor Truck. 575
As to Curtailment.......... 575
The Clayworking Family.... 575
Clay Products Exported.... 575
Some Price Comparisons... 575
The Selling Factor.......... 575
Editorial Notes and Clippings 579

MISCELLANY:

Ricketson Mineral Paint Works 576
The Labor Situation........ 576
No Exemption.............. 576
Trade Paper Ideals......... 580

INDEX TO ADVERTISEMENTS ON PAGE 589.

NO EXEMPTION.

By Strickland Gillilan,
Author of "Off Agin, On Agin, Gone Agin, Finnigin."

If you cannot launch a bullet at the fiend across the sea,
Buy a bond!
It will reach its little target straighter than a homing bee—
Buy a bond!
If you've bought a lot before,
Don't believe you've done your chore—
Buy a half a dozen more!
Buy a bond!

'Tisn't often helping others helps yourself so all-at-once—
Buy a bond!
Help the country, help your bank book—every slacker is a dunce!
Buy a bond!
If your country's saved, all right!
There's your money good and tight.
If it isn't—well, good night!
Buy a bond!

If the bond should prove a flivver, all the money that you save
(Buy a bond!)
Isn't worth a single penny—what is money to a slave?
Buy a bond!
It will keep the kaiser's hordes
Back, as well as two-edged swords!
If your pocket book affords,
Buy a bond!

If your pocket book affords,
Buy a bond!
It's the surest and the sanest way to save your measly pelf—
Buy a bond!
If you are a decent critter,
'Gainst the foe of freedom bitter,
God Almighty hates a quitter—
Buy a bond!

ORDER OF FUEL CURTAILMENT

By United States Fuel Administration, Washington, D. C., April 13, 1918.

Order Establishing a Regulation to Restrict Fuel Consumption by Manufacturers of Common Building Brick.

Order of Curtailment in Full.

It appearing to the United States Fuel Administrator, after consultation with the chairman of the War Industries Board, in view of the necessity for conserving the country's resources for the prosecution of the war and in consideration of the increased demand for fuel for industries engaged in the production of munitions and commodities required in the conduct of the war, and the fact that owing to the limitations upon transportation facilities and other causes resulting from the war, there is an insufficient supply of fuel for those purposes and also for all the other purposes existing in normal times, that it is essential to the national security and defense for the successful prosecution of the war, and for the support and maintenance of the army and navy, to restrict the consumption of fuel in certain lines of industry, and that among such industries is that of the manufacture of common building brick, as defined in the regulation hereinafter prescribed, and the United States Fuel Administrator hereby finding that the restriction of fuel consumption to the extent specified in said regulation is reasonable, and that the limitation consequent upon such restriction, in the production of such common building brick during the present war, will not seriously impair or jeopardize the future efficiency of the industry for producing such common building brick, and that such restriction will contribute to the successful outcome of the war through releasing of fuel and other resources for war purposes, and will result, with other limitations upon the use of fuel in various other lines of industry through the establishing of similar regulations, in an equitable distribution and apportionment of fuel among consumers in accordance with the relatively essential nature of their products to the prosecution of the war;

THE UNITED STATES FUEL ADMINISTRATOR, acting under authority of an executive order of the President of the United States, dated August 23, 1917, appointing said Administrator, and in furtherance of the purpose of said order and of the Act of Congress therein referred to and approved August 10, 1917,

HEREBY MAKES AND ESTABLISHES the following regulation, effective until further or other order, and subject to general or specific modification hereafter from time to time and at any time:

Regulation Restricting Fuel Consumption by Manufacturers of Common Building Brick.

The term "common building brick" in this regulation shall be construed to cover all common building brick made by any process whatsoever.

The term "manufacturer" in this regulation shall be construed to cover any person, firm, association or corporation engaged in the manufacture of common building brick.

No manufacturer, as defined above, shall at any of his plants, consume, burn or use fuel of any description, including coal, coke, fuel oil, natural gas or other petroleum products, or use power derived from any such fuel, for or in connection with the manufacture of common building brick, as above defined, during the year beginning January 1, 1918, and ending December 31, 1918, to an amount in excess of fifty per cent (50%) of the average annual amount of fuel consumed at such plant for or in connection with the manufacture of common building brick during the period from January 1, 1915, to December 31, 1917,

Excepting:

FIRST—In case such plant was not in existence on January 1, 1915, then and in such case the period during which it has been in existence prior to January 1, 1918, shall be used as a basis in arriving at a determination as to the quantity that would constitute one-half of the average annual production:

SECOND—That manufacturers of common building brick may burn fuel for the manufacture of common building brick in excess of the amount provided for in this order, whenever permission in writing for such excess production is granted by the United States Fuel Administration to any manufacturer.

(a) Upon evidence that the necessities of the government in the particular district in which such manufacturer is located cannot be supplied by plants within practical shipping distance of the place where the United States government requires such product, unless permission is granted for such excess production, and that on this account it is necessary in the interest of the United States government that such permit be issued.

(b) Upon receipt of certification from the Fuel Administrator of the state in which the plant is located that the material to be manufactured is to be used in connection with building operations of urgent public necessity and that the fuel used in manufacturing such material can be spared for such purpose.

THIRD—That whenever two or more manufacturers of common building brick shall find that a further fuel economy would result from combining the output of two or more plants, then and in such case it shall be permissible, after receiving written permission from the Fuel Administration, for the several manufacturers to combine the aggregate allotment of fuel to the several plants, to be used jointly for the purpose of production; the manufactured products of such combined plants being distributed to the individual manufacturers, as may be agreed between them.

In plants which manufactured common building brick exclusively during the years 1915, 1916 and 1917, manufacturers shall not consume, burn or use fuel to manufacture clay products other than common building brick without first presenting evidence that the manufacture of such other clay products is in the interest of the United States government and receiving from the United States Fuel Administration permission in writing to manufacture such products.

It is ordered that on or before June 30, 1918, each manufacturer of common building brick shall report to the United States Fuel Administration the number of common building brick manufactured and the amount and kind of fuel consumed during the period from January 1, 1917, to December 31, 1917, and the amount of stock on hand December 31, 1917, and that thereafter semi-annual reports showing the number of common building brick produced, the amount and kind of fuel used and the stock of brick on hand, shall be made for the period from January 1, 1918, to June 30, 1918, and from July 1, 1918, to December 31, 1918. The report for the first period shall be made not later than August 1, 1918, and for the second period not later than February 1, 1919.

Any such manufacturer violating or refusing to conform to the above regulation will be liable to the penalty prescribed in the aforesaid Act of Congress.

(Signed) H. A. GARFIELD,
United States Fuel Administrator.
Washington, D. C., April 13, 1918.

REGULATIONS OF OTHER CLAY PRODUCTS.

The regulations for other clay products are the same as the foregoing except the paragraph defining the ware and the percentage of curtailment, which in each instance is as follows:

FACE BRICK—The term "face brick" in this regulation shall be construed to cover building brick intended to be used solely for facing purposes, as differentiated from common building brick made by any process whatsoever. Curtailment, 50 per cent.

PAVING BRICK AND BLOCK—The term "paving brick or block" in this regulation shall be construed to cover paving brick or block intended to be used for the paving of roadways and streets and other paving purposes, made by any process whatsoever. Curtailment, 50 per cent.

TERRA COTTA—The term "terra cotta" in this regulation shall be construed to cover all architectural terra cotta, whether glazed or unglazed, intended to be used for the interior or exterior construction or decoration of buildings made by any process whatsoever. Curtailment, 50 per cent.

ROOFING TILE—The term "roofing tile" in this regulation shall be construed to cover any clay tile either glazed or unglazed, intended for use in the covering of building roof, made by any process whatsoever. Curtailment, 50 per cent.

HOLLOW TILE—The term "hollow tile" in this regulation shall be construed to cover all forms of fireproofing or hollow building block except silo tile, which are used in the erection of floors, roofs, partitions, walls and for other constructional purposes, made by any process whatsoever. Curtailment, 25 per cent.

SEWER PIPE, DRAIN TILE, FLUE LININGS—The term "sewer pipe, drain tile and flue linings" in this regulation shall be construed to cover all vitrified clay, cement or concrete sanitary sewer or culvert pipe, in sizes 42 inches in diameter or under; all vitrified or non-vitrified clay, cement or concrete drain tile, and all clay, cement or concrete wall coping and flue lining, made by any process whatsoever. Curtailment, 25 per cent.

FLOOR AND WALL TILE—The term "floor and wall tile" in this regulation shall be construed to cover all clay tile, either glazed or unglazed, intended to be used in floors or walls, for either utilitarian or decorative purposes, made by any process whatsoever. Curtailment, 50 per cent.

SANITARY WARE—The term "sanitary ware" in this regulation shall be construed to cover all burned clay wares used in plumbing installations, made by any process whatsoever. Curtailment, 50 per cent.

STONEWARE—The term "stoneware" in this regulation shall be construed to cover vitrified and glazed receptacles and containers made from common buff burning clays, by any process whatsoever, excepting stoneware used in the chemical industry. Curtailment, 15 per cent.

ENAMELED SANITARY WARE—The term "enameled sanitary ware" in this regulation shall be construed to cover all enameled iron ware used in plumbing installations, such as bathtubs, bowls, sinks, tanks, etc., made by any process whatsoever. Curtailment, 50 per cent.

Any one desiring more specific information in regard to any particular industry will please communicate direct with H. A. Garfield, United States Fuel Administrator, Washington, D. C., to whom report must be made on or before June 30th, 1918, as provided in the foregoing order.

PASSING ALONG THE GOOD THINGS.

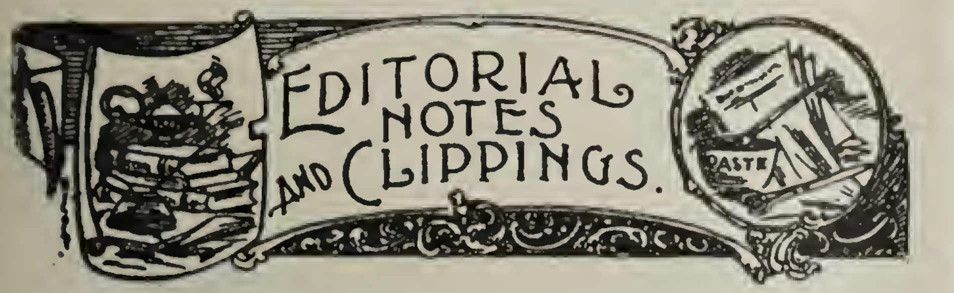
Do you make your trade papers and magazines do full duty? Do you pass along the good things contained therein to others? If so, why not tell how you do it that others may be encouraged to do likewise.

In the office of a fairly important concern there was encountered recently a magazine rack with a bulletin board above it and on the bulletin board was this statement:

"Knowledge is power. Grasp it in your hands, the magazine rack is within your reach."

In this rack was counted fifteen different trade papers and magazines. Some pertained specifically to the industry itself, other only incidently, and some were purely literary. They were all kept there, however, and the invitation to take them and use them was extended not only to the office force, but to the superintendent and foremen and the workmen out in the plant.

This is one good way to make the trade papers and other periodicals pay their way double and do their full measure of duty. Also it is a splendid way to pass good things around and help spread enlightenment and encourage ambition and development among the men at work.



EDITORIAL NOTES AND CLIPPINGS.

William Crumlie of Hunterville, Mo., will move his brick and tile factory to Poplar Bluff, Mo.

George W. Kinzer has purchased the Euphrata (Pa.) brick plant from Wilson Hertzog and will at once put the plant in operation.

The Union Brick Co. of Iola, Kas., of which Frank C. Nicholson is president, contemplates establishing a brick plant at Shreveport, La.

The North American Brick & Clay Products Co. has been incorporated to establish a brickmaking plant at Mansfield, O. W. W. Sharp is president of the company.

The Church Brick Co. of Fieldsboro, N. J., has been incorporated with $50,000 by Thomas J. Church, John Church and Leon Carty of Fieldsboro.

Upon the application of the Northern Indiana Brick Co. of Michigan City, Mortimer P. Reed of Michigan City has been named receiver for the Portage Brick Co. of South Bend, Ind.

The Adson Brick Co. of Wilmington, Del., has been incorporated with $25,000 capital stock. The incorporators are F. P. Hudson, J. R. Buckland, Philadelphia, Pa.; S. Charles Adams, Mount View, N. J.

The plant of the Spahr Brick Co. at Maysville, Ky., was damaged by fire recently. The plant adjoins the coal docks of the C. & O. Railroad and caught fire when the railroad company's docks were completely destroyed.

The Bridgeton Brick Co. of Bridgeton, N. J., which has been in bankruptcy, has been taken over by George Maier of Bridgeton, for a syndicate, which is to put it in operation. It is said the creditors will get but a small per cent of their claims.

Following several months of inactivity because of winter the plant of the Atlantic (Ia.) Brick & Tile Co. has resumed operations. The new manager of the plant is M. A. Koebel. He succeeds C. E. Taylor, who has accepted a similar position with the brick plant at Creston.

The Pittsburgh Fire Brick Co., 109 Sixth street, Pittsburgh, Pa., reports a brisk business in this district this season. The company is selling agent for nearly a half hundred brick manufacturing concerns throughout the country and has on exhibition in its storeroom an extensive and comprehensive display of brick of all kinds, colors and finishes.

John Mullaly of Poughkeepsie, N. Y., has brought action for the dissolution of the partnership of the Aetna Brick Co. of New Britain, Conn., and the appointment of a temporary receiver. Mr. Mullaly sets forth that the Aetna Brick Co. was organized on July 29, 1910, and at present he owns 200 shares of the stock. The concern is incorporated for $50,000, of which there are 1,000 shares of stock outstanding at $25 per share. He claims that the concern has assets of $110,000 and debts of only $36,000.

Warren W. Ittner, manager of the Malinite Company of Belleville, Ill., has announced the plant will start operations May 1, and will manufacture high-grade fire brick and refractories. About 40,000 fire brick will be the output at the beginning. Extensive experiments have been carried out under the direction of A. W. Malinovszky and success is assured the company. Mr. Ittner is also manager of a number of building brick plants operated at Belleville under the firm name of the Belleville Brick Co.

The Far West Clay Company of Tacoma, Wash., has certified to an increase in capital stock from $250,000 to $350,000.

C. P. Klinger, tile manufacturer at Paulding, O., was severely injured while at work in the factory, which resulted in a week at the hospital.

The Kenilworth Tile Company will rebuild their plant at Newell, W. Va., which was recently destroyed by fire. It will cost in the neighborhood of $50,000.

The Loogootee Face Brick & Tile Co., Loogootee, Ind., has filed certificate changing the name of the company to the Loogootee Fire Clay Products Co.

Despite the fact that the brick business generally has been adversely affected by the world war, the Illinois Brick Co., Chicago, declared its regular quarterly dividend of 1½ per cent in March, payable April 15.

A new clay products company recently incorporated at East Liverpool, O., is the Electric Clay Forming Co. The company is capitalized at $10,000. Herbert A., James and Lois Miles and Eber J. and Margaret Smith are interested.

Frederick K. Farr of Mount Vernon, N. Y., is at the head of the Kinkletown Brick & Kaolin Co., which has recently been incorporated with $300,000. A. Floyd Barry of Brooklyn and Samuel H. Wandell of New York are also interested.

The District Clay Products Co. of Baltimore, Md., has been incorporated with $125,000. Those interested are Samuel A. VerValen, Samuel G. McClave and C. L. Peaslee. Brick, tile, hollow ware and other clay products will be manufactured.

Edward Blair, a pioneer brick manufacturer of Pittsburgh, Pa., died at his home in that city recently. Mr. Blair was born in Ireland and came to this country when quite a young boy. He served in the Civil War and after his return home engaged in the brick business with his brothers, William and David, and had conducted same up until the time of his death. A widow, two sons and one daughter survive.

The Blue Ridge Enameled Brick Company of Kunkletown, Monroe County, has been leased by Hoyt & Ward of New York City. Both these gentlemen are stockholders in the New Jersey Zinc Co. at Palmerton, and it is presumed that they are back of a proposition to rehabilitate the old company at Kunkletown and put it again on an operating basis for manufacturing fire brick.

Florius D. Meacham, a retired brick man of Chicago, died at his home in Hinsdale, Ill., the latter part of March. In 1874, together with F. S. Wright, he formed the firm of Meacham & Wright, dealers in limes and cements, out of which later grew the Meacham & Wright Brick Co., of which he was president until he retired from active life in 1916. Mr. Meacham was a Civil War veteran and was a member of both the Grand Army of the Republic and the Loyal Legion. He was president of the Board of Review of Cook County for a number of years. A widow, three daughters and a son, the latter with the Rainbow Division in France, survive.

The plant of the Warren B. Ferris Brick Co., Fulton road NW and the B. & O. Railroad, Canton, O., which has been closed since last October, was opened recently by the United Refractories Co. of Columbus. The new company has been installing new machinery for some time and making other improvements, according to W. J. Rinehart, general manager. The company will manufacture fire brick exclusively and will turn out about 35,000 brick per day at the start. L. B. Peart,

(Continued on page 580.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

for many years connected with the Harbison-Walker Co., will be general superintendent.

The McArthur Brick Co., McArthur, O., will build a number of brick houses for the use of their employes. This is one way for the brick man to create business.

The Coast Fire Brick Company, Oakland, Cal., has filed incorporation papers with the county clerk. The capital stock is $22,000, and the directors are M. Fitzpatrick, C. E. Hall and S. A. Eyre, all of Oakland.

The Onondaga Brick & Tile Corporation has taken over the plant and property of the Onondaga Vitrified Brick Co. at Warner, N. Y. The new firm will manufacture hollow tile as well as standard brick.

Speese & Pfeffer, brick manufacturers of Gettysburg, Pa., for many years, have announced a dissolution of partnership. Mr. Pfeffer will continue the business under the name of the Gettysburg Drain Tile Works.

The Brown Brick Co. of Dallas, Texas., has completed the installation of machinery for the manufacture of common brick and is now turning out 40,000 building brick per day. G. C. Brown is secretary-manager of the company.

All of the retiring directors of the National Fireproofing Co. were re-elected at the annual meeting of the stockholders, held recently, as follows: H. M. Keasbey, J. S. Craig, W. L. Curry and D. M. Campbell. President W. D. Henry stated that the government will probably place a price on tile and that it will have considerable business in this line to offer.

The Clay Products Co. of Brazil, Ind., has secured an order from the quartermaster's department for 800,000 hollow tile to be used in the construction of two storage warehouses at Jeffersonville, Ind. The order is being rushed with all possible speed and the tile is going forward at the rate of twelve cars per day. The company, it is reported, has received other valuable war orders.

Mrs. Catherine Trask and her daughter Ethel of Danvers, Mass., are engaged in a most unusual occupation for women, that of running a brick yard. The brick yard at Danversport has been in the family for more than thirty-five years, having been started by the grandfather. Upon his death, Mrs. Trask's husband took up the work and when he died in 1906 the women of the family undertook the business.

W. D. Richardson, the well-known clayworking engineer, has recently sent an announcement to his friends and clayworkers generally that he has returned to Columbus, Ohio, and taken charge of the engineering, manufacturing and supply business of the Ceramic Supply & Construction Company, and will in the future devote his entire attention to problems of the clay industries, especially to the drying and burning of clay products and the construction and operation of continuous kilns and gas producers, with headquarters at 171 W. State St., Columbus, Ohio.

According to a note in the Commerce Reports, issued by the Bureau of Foreign and Domestic Commerce, Washington, D. C., under date of April 11, a brick manufacturing company in England desires to purchase brick-making machinery with a view to improving methods of drying, burning, and handling bricks in the green state and also the finished product. The firm has large marl beds from which are obtained various kinds of marl, consequently the output is a varied assortment of different kinds of brick. The company also wishes to obtain supplies of precipitated carbonate of baryta, which is used as a scum preventive. In writing the Bureau relative to this company, refer to Opportunity No. 26777.

TRADE PAPER IDEALS.

A trade paper to be worthy of and obtain the support of the trade it represents should have ideals as well as ambitions. In fact, the ideals should be a part of the ambitions. It should seek to reflect the best sentiment of the people in its field, to promote progressive ideas and point the way to broad visions of goals toward which efforts should be directed. Moreover, the true ideal of the trade paper is to serve the reader who subscribes for it with advice calculated to be of benefit, not only for the time being, but look to the future and earn confidence as well as good will.

It used to be the plaint of the editor of the county weekly that everybody who paid a dollar a year subscription, and many who failed to pay, thought the paper should be run according to their notions and ideas and that the editor should have no other ideals than those of the readers. These, of course, are too interminably mixed and so at cross purposes with each other there is no following them, even if the editor were without ideals, himself. With the development of the modern trade paper there has come another relationship somewhat suggestive of this, but still differing considerably. The trade paper editor himself should have in the beginning ideals of a high order of service that will bring him both friendship and reward. But often the trade which the paper serves feels toward the trade paper editor pretty much as the old-time farmer felt toward the county editor and it is not an uncommon thing for too many of them to want to furnish ideals for the paper, which serve their trade, instead of being pleased as the editor hopes they will be with the ideals he is inspired with.

There are some who under stress of emotion want to see their trade paper figuratively spit fire over some proposition they are interested in, that is they want this for the moment, but after they have cooled off and thought it over they often have greater confidence in and respect for that editorial policy which is well balanced in reasoning rather than fiery and fitful. There is a distinction betwen emotions and ideals. Emotions are things of the moment, occuring in different forms from time to time, but ideals are visions of goals ahead, which, though they may enlarge and shift slightly, are better guide posts than the passing emotions of the day.

FIRE BRICK and FIRE CLAYS

Manufacturers of High Grade Fire Brick and Ground Fire Clays. Prompt shipments.

The Cameron Clay Products Co., Emporium, Pa.

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THE WORLD OVER
**SCHURS
OIL BURNER CO.**
Los Angeles, Cal.

NOTICE!
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BRICK MFRS.
FOR
QUICK BURNS
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BETTER COLOR
BURN OIL
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**SCHURS
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TURN ONE COLLAR

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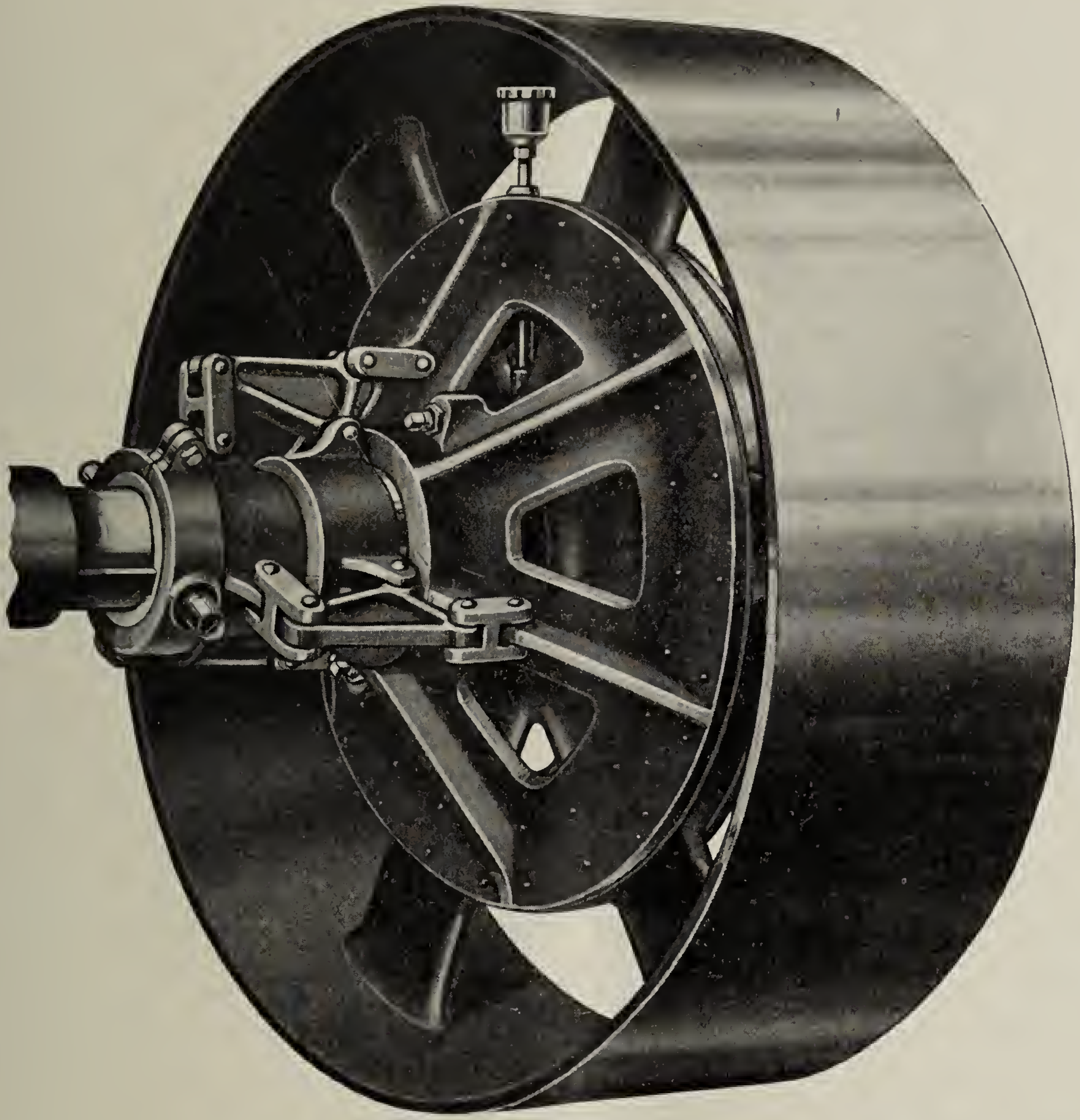

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Balanced Pressure==Positive Disengagement
Removable Bushings==Greater Friction Surface

Write for Bulletin No. 105

International Clay Machinery Co.

Dayton, Ohio, U. S. A.

WAGES AND LIVING COST A WARTIME PROBLEM

(Continued from page 553.)

With few exceptions every important line of commodities has been increasing in price since 1897. The rate of increase has been fairly uniform up to the year 1916, when prices began to rise by leaps and bounds. Taking the record of wholesale prices as kept by the United States Bureau of Labor, Bradstreet's and the London Statist, the rise is as follows:

Year	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Bureau of Labor	69	69	77	69	72	76	74	79	81	77	82	81	80	81	100	142
Bradstreets	..	..	70	72	75	75	72	76	77	76	80	81	79	86	104	137
Statist	..	..	..	72	77	80	73	74	78	80	85	85	85	108	137	174

Taking the figures of the United States Bureau of Labor, the changes may be shown from nine principal classes of commodities as follows:

Year	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Farm Products	66	62	66	63	64	70	69	79	84	76	82	82	85	83	100	154
Food and Provisions	67	64	68	68	66	70	74	78	79	78	85	79	81	83	100	140
Cloths and Clothing	66	70	70	72	77	82	74	78	79	76	78	79	78	78	100	143
Fuel and Lighting	80	92	79	75	78	81	78	76	72	70	77	87	80	75	100	147
Metals and Metal Products	66	65	60	66	76	81	63	62	63	60	67	67	59	65	110	140
Lumber and Building Materials	76	79	80	84	93	96	91	96	100	100	98	99	96	93	100	123
Drugs and Chemicals	68	67	68	67	66	67	70	71	72	72	71	70	72	80	100	130
House Furnishings	112	111	106	99	99	99	95	96	94	90	90	91	94	92	100	141
Miscellaneous	76	78	78	78	80	84	80	90	96	86	84	83	81	81	100	127
All Commodities	69	69	70	69	72	76	74	79	81	77	82	81	80	81	100	142

It will be noted that prices for all of the nine classes of commodities were higher in 1917 than in any preceding year of the period and that with the exception of house furnishings, all groups were as high or higher in 1916 than ever before. To show the changes in the several classes for selected periods a further table may be arranged as follows:

Increase in General Level of Prices for Selected Periods.

	1916-1917	1913-1917	1902-1917
Farm products	54%	86%	133%
Fuel and lighting	47%	70%	84%
Cloths and clothing	43%	81%	117%
House furnishings	41%	55%	26%
Food products	40%	77%	109%
Metal and metal products	40%	108%	112%
Drugs and chemicals	30%	86%	91%
Miscellaneous	27%	53%	67%
Lumber and building materials	23%	24%	62%
All commodities	42%	75%	106%

Bradstreet's index number, showing changes in the general level of prices, follows very closely that of the Bureau of Labor. The two authorities, however, group the various commodities so differently that it is impossible to make a direct comparison of the changes of the prices of the several groups. Using Bradstreet's classification, the several main classes of commodities show the following changes from Jan. 1, 1917, to Jan. 1, 1918:

Oils, increase	73.5%
*Miscellaneous, increase	62.0%
Textiles, increase	45.0%
Fruits, increase	38.0%
Metals, increase	37.0%
Breadstuffs, increase	36.0%
Drugs and chemicals, increase	35.0%
Provisions and groceries, increase	34.0%
Building materials, increase	30.0%
Live stock, increase	22.0%
Naval stores, decrease	10.0%
Hides and leathers, decrease	11.0%
Coal and coke, decrease	17.0%

*Includes rubber, tobacco, newsprint paper, ground bone, hay, cotton seed and hops.

When a change in the price level occurs, wage earners, as well as owners of business enterprises, are immediately if not directly affected thereby. When the price level falls the wage earners as a class are usually benefited, because their wages will then purchase more goods. When the price level rises wage earners are harmed, since the wages will purchase less. In either case the condition is a temporary one, since a change in the price level of goods causes a change in the general level of wages, wages rising or falling as the case may be until an equlibrium is restored by the new adjustment. Changes in the wage scale generally follow rather than precede changes in the price level of goods and moreover generally move more slowly, the employers resisting advances and the employes resisting reductions when a change in the various relationships occur. Wages are thus more stable than either prices or profits, a condition that is desirable, since the average wage earner's family would suffer more from a sharp fall in wages, following a fall in prices, than they would gain from a rapid rise in wages following an advance in the price level. Whether the adjustment is made promptly and accurately or the reverse, wages are always to be viewed from the standpoint of what they will purchase, that is money wages must be translated into real wages. To determine real wages it becomes necessary to determine what lines of expenditure absorb the working man's wages and what proportion he normally devotes to each. This question has been a favorite occupation of students of our present economic system, some approaching it in a scientific spirit, others as propagandists of a new social order. The most comprehensive investigation is nearly fifteen years old, having been made by the United States Commission of Labor in 1903. It included a study of the budgets of 25,440 families, living in thirty-three states, no one of which families had an annual income of more than $1,200. According to this report the normal distribution of the incomes of families expending on the average of $768.54 per year was as follows:

Food	42.54%
Clothing	14.04%
Rent	12.95%
Miscellaneous	5.87%
Fuel	4.19%
Life insurance and payments on mortgages	3.59%
Furniture	3.42%
Liquor and tobacco	3.04%
Books and amusements	2.69%
Sickness and deaths	2.67%
Taxes, interest on mortgages and property insurance	1.47%
Lighting	1.06%
Clubs and lodge dues	.67%
Labor union dues	.50%
Charity	.31%
Total	100.00%

A later investigation by the Federal government classifies

(Continued on page 584.)

THE
UNDERWOOD PRODUCER GAS BURNING SYSTEM

(PATENTED)

Burns Every Kind of Ceramic Materials

Electrical Porcelain, Architectural Terra Cotta,

Paving, Building and Face Brick,

Drain Tile, Hollowware, Roof Tile, Etc.

And does it Economically and Successfully.

It conserves fuel in a large measure; does likewise with labor. It is the only logical system to install where the natural gas supply has failed or has been materially diminished or where prices make its use prohibitive.

Then again our Uncle Sam wants you to burn just as little coal as you can. With the Underwood System you can carry out his wishes because you cut down your fuel requirements from 25 to 50 per cent. Yet you are able to produce your normal output. So this reduction in your fuel consumption does not diminish your production but does cut production costs and we hazard a guess that that is what you want. Have you ever thought of this?

It won't cost you a cent to have placed before you in clear, concise, understandable English, all of our facts and data, together with the convincing proofs of some who have eaten of the pudding.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-
Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

WAGES AND LIVING COST A WARTIME PROBLEM

(Continued from page 582.)

expenditures somewhat differently and shows that for families of five, living in Massachusetts and expending $744 per year, the apportionment was as follows:*

	Per Week.	Per Year.	% of Year's Exp.
Food	$6.02	$313.00	42.05
Housing	2.52	131.00	17.60
Clothing	2.63	136.00	18.40
Fuel and light	.82	42.75	5.74
Health	.22	11.65	1.43
Insurance	.35	18.25	2.45
Sundries	1.75	90.90	12.21
	$14.31	$744.35	99.88

Even if we have accurate statistics showing the apportionment of a working man's expenditure under normal conditions, the problem of comparing real wages from year to year is not yet solved. We must then have equally accurate statistics in regard to money wages extending over wide areas and over years which we wish to compare. Such statistics do not exist in this country and the best we can do is to compare such as we have with the hope that our existing wage statistics are typical of the whole situation. Such data as we have is, of course, limited to wage earners working under the union scale, that is a scale based upon an understanding or written agreement between an organization of union men and an employer or a group of employers. Such scales usually provide for a minimum wage per hour and a maximum number of hours per day.

Provisions are, of course, made for overtime work and, consequently, a small portion of the men working under a union scale receive more than the regular scale specifies. For example, in the machinists' trade for the year 1916, 71.2 per cent of the men working received the wage scale agreed upon, 28.2 per cent received more than the scale, while .6 per cent received less. In the railway shops, 89.5 per cent received the union scale, 10.3 per cent received more than the scale, while only .2 per cent received less. Generally speaking, somewhat more than 10 per cent of the men working under the union scale receive more wages than an exact observation of minimum wages and maximum hours would call for.

The Bureau of Labor of the Federal government operates a section whose function is to obtain data in regard to the union scale of wages in various industries and in order that the results of its work may have as wide publicity as possible it publishes a series of volumes at irregular intervals under the title "Wages and Hours of Labor." In the issue of May, 1916, the results of an investigation of 100 separate trades in ten different industries† was published, from which the following data has been secured. This table shows the changes in wages per hour, per week and in the retail prices of food. (See table top of second column.)

Index Numbers of Union Wage Rates and Hours of Labor and Retail Prices of Food.

Year.	Rates of Wages per Hour.	Full Time, Hours per Week.	Rates of Wages per Week, Full Time.	Retail Prices of Food.	Purchasing Power of Hour's Work in Food.	Purchasing Power of Week's Wages in Food.
1907	84	104	86	72	116	120
1908	85	103	87	74	114	117
1909	86	103	88	78	110	113
1910	88	102	90	82	108	110
1911	90	102	91	81	111	112
1912	91	101	92	86	106	107
1913	93	101	94	88	106	107
1914	95	101	96	90	106	106
1915	96	101	96	89	107	108
1916	100	100	100	100	100	100

The working man in the trades investigated and reported, has, it will be noted, been losing in real wages when his wages are converted into food, or into any other article which has increased in price during the past few years faster than his wages have risen. As might be expected, wages in the various industries and various trades have risen unequally, some trades advancing as much as 28 per cent during the ten-year period, others only 6 per cent. Arranged by groups, according to the percentage of increase during ten years, the results are as follows:

Group 1. Trades showing an increase of more than 25 per cent in rates of wages per week, 1907-1916:

Electrotypers, battery men and builders	28%
Painters	28%
Blacksmiths' helpers	27%
Core makers	27%
Steam fitters' helpers	25%

Group 2. Trades showing an increase of 20-24 per cent in rates of wages per week, 1907-1916:

Bakers	23%
Sheet metal workers	22%
Machinists	22%
Boiler makers' helpers	20%
Cement workers, laborers	20%
Steam fitters	20%

Group 3. Trades showing an increase of 15-19 per cent in rates of wages per week, 1907-1916:

Electrotypers, finishers and molders	19%
Molders, iron	19%
Pattern makers, wood	19%
Boiler makers	18%
Pressmen, cylinder	18%
Inside wire men	18%
Stereotypers, day work	16%
Cement workers, finishers' helpers	16%
Structural iron workers	15%
Blacksmiths	15%

For the remaining eighty trades, either the data is incomplete or the increase in the union scale is less than 15 per cent. In those trades where the data regarding the union scale is incomplete it may be said that such information as the bureau has been able to collect indicates that the rise in the scale has been fairly uniform with the movement in those where the record is complete.

Comparing the general rise in prices as shown by the index number calculated by the Bureau of Labor, Bradstreets's and the Statist, with the index number showing the rise in the union scale, it appears that:

First. Prices of commodities have, during the past ten

(Continued on page 588.)

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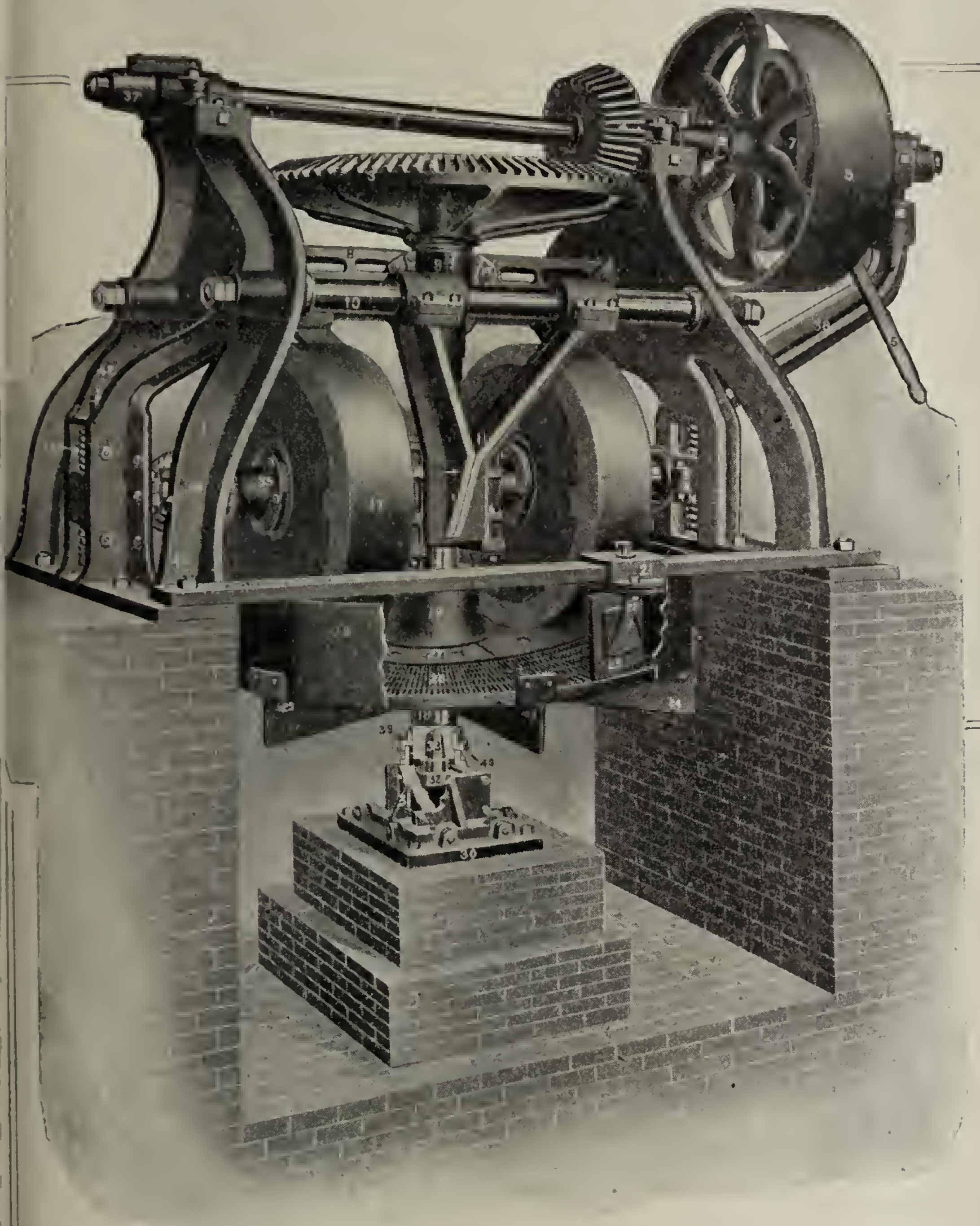
*Women and Child Wage Earners in the United States, Sen. Doc. 645, 61st Congress, second session.

†1, Baking trades, one trade; 2, brewing and bottling house workers, seventeen trades; 3, building trades, thirty-seven trades; 4, chauffeurs and teamsters, three trades; 5, freight handlers, one trade; 6, granite and stone cutters, two trades; 7, metal trades, ten trades; 8, millwork, two trades; 9, printing and publishing, twenty-five trades; 10, soft drink manufacturers, three trades.

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

Speed of Drive Pulley—140 R.P.M.

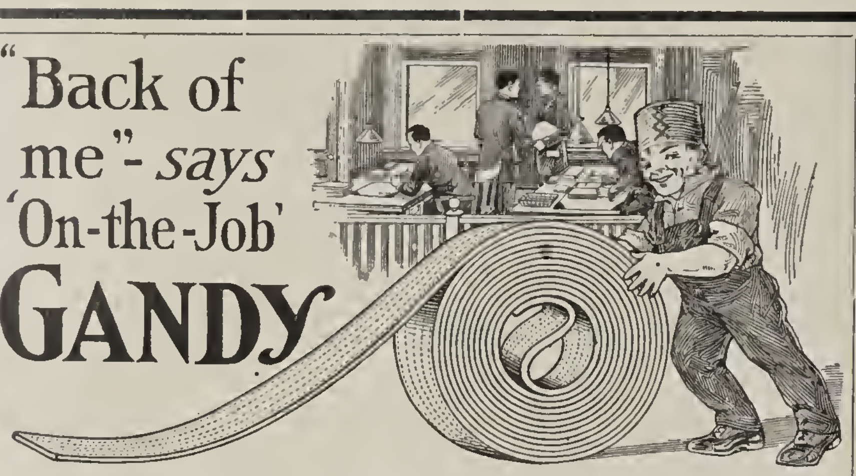
Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.

"Back of me"- *says* 'On-the-Job' GANDY



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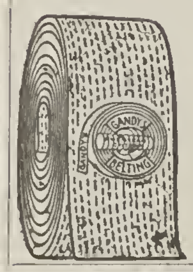


Gandy Power and Conveyor Belts carry the well known ***Gandy*** trademark. Look for the "Green Edge."

Samples and price list on request.

BURNING CLAY WARES.

(Continued From Page 541).

inches, depending upon the coal. If the coal is high in ash and clinkers badly, the wider furnace should be used in order to insure sufficient free area for the required combustion air.

A number of years ago, after investigation of many kiln operations, we adopted the rule that for cone 1 the flat grate area should be 1.5 per cent of the cubical setting space in the kilns, with an increase of .05 per cent for each additional cone. Pit furnaces which get air through the pit area and which are not restricted by grate bars should be about two-thirds the size of the flat-bar furnaces. In designing a furnace we should always take into consideration the character of the fuel, the kiln tonnage and the time required to burn.

A practical rate of combustion is eight pounds of coal per foot of flat grate area per hour. This may be increased to twelve pounds in burning hollow ware, or other ware not closely set as bricks, in consequence of lessened kiln resistance applicable to overcome the furnace resistance, but in burning closely set ware the rate is often less than eight pounds.

As a basis for such determination the following general data for bituminous coal per ton of burned ware may be used:

	Fuel.	Time.
Common bricks	150 to 400 lbs. of coal	5 to 8 days
Face and sewer bricks...	300 to 700 lbs. of coal	6 to 12 days
Paving blocks...........	500 to 800 lbs. of coal	6 to 12 days
Drain tile	350 to 800 lbs. of coal	2 to 5 days
Hollow blocks	300 to 600 lbs. of coal	3 to 5 days
Sewer pipe	800 to 1,500 lbs. of coal	5 to 8 days
Terra cotta	1,200 to 1,800 lbs. of coal	3 to 5 days

These requirements are on the assumption of an average quality of coal, and the differences are due to variations in temperature required, to furnace and kiln construction and to the care taken in the firing operation.

A dirty, high ash, badly clinkering coal, will require a larger grate area in order to maintain a proper free area and similarly, a low value lignite must have provision for burning two or three times the estimated quantity. The tonnage and character of the setting must also receive some consideration as well as the time required to burn. Some kilns are stacked to the crown with ware, while other similar ware requires lower setting.

A kiln set with 90 tons of drain tile will require larger furnaces than one set with 60 tons. Paving blocks in some instances are burned in four and one-half to five days, but in others require ten to thirteen days with little difference in temperature requirement. Obviously, the former should have greater grate area.

The question might arise, why not increase the stack height and burn at a faster rate, to which it may be replied that such high rate of combustion, reducing as it would the per cent radiation loss, would give a higher flame temperature in the top of the kiln and in consequence a rapid absorption of heat by the top ware to its ruin.

When we have attained the finishing temperature on top we simply wish to hold it by gases of approximately the same temperature, and work this temperature to the bottom of the kiln. We could get the desired bottom temperature quicker with a higher rate of combustion, but to do so would overburn the top, perhaps ruin it, and in any event the result from top to bottom would be less uniform.

To get uniform results in a down draft kiln we must work with a so-called balanced draft, namely, a draft which will merely keep the furnaces cleared of their gases and which if ever so slightly reduced will cause the furnaces to smoke around the feed holes. This applies particularly to the later stages of the burning when the ware on top has attained the finishing temperature.

During the early stages of burning—water smoking and heating up—when the stack intensity is low, we should use all the draft we can get, and in the majority of instances more would be desirable.

Greaves-Walker bases the grate area on the kiln area.

His maximum furnace has one foot of grate area to four feet of floor area and the minimum has one foot of grate to eight feet of floor. He adopts one foot of grate to 7.5 feet of floor as the best average ratio. For sewer pipe and similar salt-glazed ware he gives a ratio between 1 to 6 and 1 to 8, the latter having the preference.

If the furnace area is too small, there will be an excessive waste of fuel:

(1) Because of a required longer firing period.

(2) Because of frequent stirring of the fires and repeated clinkering to get a necessary higher rate of combustion resulting in a high carbon content in the ash.

An excess grate area within reasonable limits can be controlled to a minimum rate of combustion by longer intervals between firing periods and by allowing the clinker to accumulate and thus reduce the free area.

(To be continued.)

RICKETSON MINERAL PAINT WORKS INCREASE CAPITAL STOCK.

It was announced recently that due to the expansion of their business, the Ricketson Mineral Paint Works, of Milwaukee, Wis., have increased their capital stock. This is a well-known company that has been in operation constantly for thirty-three years manufacturing dry mortar colors and mineral paints, which are known throughout the country as the colors that "will not fade." This is a long record, and one of which the company takes a just pride. During all of this time the company has enjoyed the continued patronage of many of the largest building supply houses in the United States, convincing proof of the quality of their products and manner of transacting business.

CURRENT NEWS NOTES.

The plant of the Malberbe Basil Clay Products Co., Vincennes, Ind., was almost completely destroyed by fire April 6, which was of unknown origin. The company manufactured clay products for glass manufacturing plants.

The Casper Brick & Tile Company has about completed their new plant at Casper, Wyoming, and expect to start up the latter part of the month. The product will include building brick and tile, flue linings, hollow blocks, etc.

Frank A. Rhodes and B. S. Maultsby, interested in the McIntyre Brick Company and the Excelsior Brick Company at Montgomery, Ala., have reached an agreement as to a division of their interests, by which Mr. Maultsby acquires Mr. Rhodes' interest in the McIntyre Brick Company and turns over to Mr. Rhodes his share in the Excelsior Brick Co.

Martin N. Kimbell, a well known brick manufacturer of Chicago, was found dead in the basement of his home at Park Ridge, one of Chicago's suburbs, April 15. Mr. Kimbell's family has been spending the winter in California, and receiving word that they were on their way home, Mr. Kimbell had gone home to open up the house and was overcome by asphyxiation. It is believed in turning on the gas he had overlooked the fact that a pipe had been disconnected, for evidence at the coroner's inquest disclosed the fact that Mr. Kimbell had struggled to reach the open air but had been overcome on the stairway. He was at the head of the Kimbell-Hill Brick Company, with offices in the Chamber of Commerce Building. A wife, two sons and a daughter survive. One of the sons, Martin, Jr., is in the service of his country, being stationed at Camp Logan, Houston, Texas.

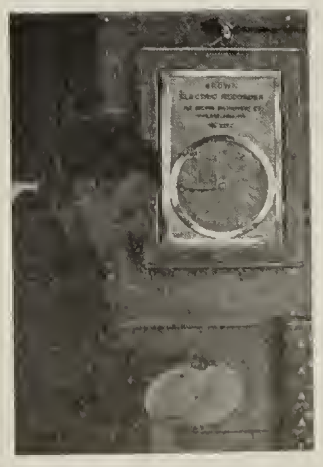
Check Up Your Kilns

BE SURE there are no leaks in your plant—no waste of fuel, labor or material—by checking up your kiln temperatures with Brown Pyrometers.

Brown Pyrometers will do for you what they have done for hundreds of other brickmakers. They will place a substantial balance on the credit side of your ledger by giving you uniform 90% ware,

Write to the Brown Instrument Co., Philadelphia, or to any of their district offices in New York, Pittsburgh, Detroit, or Chicago, for complete information now.

Brown Pyrometers



WAGES AND LIVING COST A WARTIME PROBLEM

(Continued from page 584.)

years, 1907-1917, inclusive, risen approximately 32 per cent.

Second. The union wage scale in the reported trades has risen 19 per cent in wages per hour, but as a result of the shortening of the working day only 16 per cent in wages per week.

As a result of the habitual lagging of the wage scale the real wages of the working man have actually been decreasing at somewhat more than 1 per cent per annum.

What has been happening during the year 1917 is known in a general way, but the data is not present in sufficient quantity and quality to make comparisons of general significance. That commodity prices have taken the biggest jump since 1863-4 is certain. During the year wages also have rapidly advanced, the actual increase being in some cases as much as 50 per cent. Generally, however, the rate of increase is much less than that mentioned as an extreme case. The report of the Industrial Commission of the state of New York shows that wages of factory workers advanced during the year 1917 only 11 per cent, while the Mayor of Philadelphia's Food Commission reported recently that wages in that city increased for the same period 16 per cent.

We have thus far noticed that prices of commodities have been rising steadily since 1897 and that since the outbreak of the war the rise has been extremely rapid and also extremely unequal in various lines. Wages have risen as steadily, but more slowly and more evenly. As a result some industries are abnormally profitable, while others are feeling the pressure of rising wages without at the same time being able to advance prices except at the sacrifice of a part of the normal production. The normal and indeed the inevitable consequence of this general movement is a demoralized industrial organization—demoralized at a time when the needs of the nation require the maximum production of those things which are necessary for success in war. What then is the duty of the business man whose hand is at the throttle of the several business enterprises which make up the industrial machine?

(1) The first duty of the business man is to devote his capital and labor force so far as possible to the production of those commodities the price of which the demands of war have caused to rise abnormally fast. The automobile manufacturer should turn his factory so far as possible into a manufactory for airplanes, motor trucks, munitions. The manufacturer of clothing should cut out fancy weaves and fancy goods of all kinds and produce more of the staples. The manufacturers of non-essentials should drastically limit their production in order that the energies may be devoted to the production of goods which are necessary in times of war.

(2) The second duty of the business man is to make a scientific study of wages and adopt some such plan as that said to have been put in force by the Oneida Community, Limited; the Solvay Process Company of Detroit, and the Franklin Automobile Company of Syracuse—each of which adjusts wages monthly on the basis of changes in the price level as shown by Bradstreet's index number.

(3) The third duty of the business man is to support the legitimate policies of his association, to the end that without in any way incurring the penalties of the Sherman Act, he may in co-operation with his fellows in the same business adopt and follow some rational basis for figuring prices and adjusting wages. The work of the Employers' Associations in connection with the formation of the protocol in the cloak and suit trade in New York City may be cited as a notable example of right methods of determining wages.

(4) In the fourth place, the business man ought to be the foremost advocate of more taxes and less government loans for the purpose of paying for the legitimate costs of the war. Such a policy has two effects, both desirable in themselves: First, it prevents inflation, a rapid rise in prices and thus tends to preserve in a state of the highest efficiency our industrial organization; second, it also, by taxing those who are making abnormal profits out of the war, places the real burden upon those who ought to bear its costs rather than transferring a big debt to the next generation, which will in all probability have enough burdens of its own creation to bear.

As a general proposition, the conclusions of the British House of Commons seems to me to be more than usually wise, so wise that I am using it as a closing sentiment:

"1. Whatever measures are possible should be taken by the Government to avoid the creation of new credits in financing the war.

"2. An inquiry should be set on foot to ascertain what has been the actual increase in the cost of living to the working classes and how far it has been counterbalanced by advantages apart from wages due to war conditions.

"3. The measures for the limitation of profits should be continued and strengthened, and should be made widely known to the people.

"4. The strongest case should be required to be established before any advance of wages is conceded on any ground other than the rise in the cost of living. Nor should it be regarded as a rule—and we have no reason to think that labor in general desires that it should—that wage earners in receipt of not inadequate pay before the war should be exempted from all share in the economic sacrifices involved in a state of war.

"5. A single policy under the general direction of one authority should be adopted in all industries in the determination of the wage question."

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171 West State St., Columbus, Ohio

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. LXIX. INDIANAPOLIS, IND., MAY, 1918. No. 5.

GIRL BRICKMAKERS IN GREAT BRITAIN

Building Brick Plants in Petersborough England are now being operated in part by Women. Labor Saving Machinery Makes the Work Less Strenuous than in the Olden Time and Further Developement may be Anticipated as a Result of War Conditions.

THE MAIN PROBLEM in practically all lines of industry, commerce and transportation today is that of help, of man power. Many other problems enter. Some industries are seriously curtailed because of war conditions, some are greatly augmented, and there are many and varying factors entering the affairs of life all around us, yet in the final analysis it gets down to the question of help. In the solving of this question the women folks of the world are coming to the front wonderfully, and in many instances furnish the big part of the answer to the cry for more help while the men are gone to war.

We have in this great country of ours approximately 100,000,000 people, and it is estimated that of these at least 10,000,000 are engaged directly in war activities. This includes men called to the colors and the men and women called directly into service to supply the men with munitions and material for direct army needs. At first that looks like only 10 per cent., but when we go to our industrial statistics and learn that only about 40,000,000 out of the 100,000,000 population are engaged in gainful occupations, it looms up larger; it shows then that a fourth of our working people, both men and women, are engaged in war activities. With the doubling of our army, as we are planning to do now, it will mean doubling the activities all around, until in the end perhaps half of the normal working force of the United States will be engaged in war activities, and to quite an extent they will be depending upon the other half for supplies and sustenance.

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Girls Soon Become Expert in Taking Brick from Moulding Machine.

Naturally, under these conditions, there develops shorthandedness all around. It develops even among those industries which are curtailed because of war conditions, and it will be found before the year is over the most serious problem is that of getting help. Considering, then, that the women are playing an important part in the industrial and commercial activities, the natural question is, to what extent may they enter and be of assistance in the clayworking industry?

In brickmaking proper, there has not been the turning to women for workers in this country like in the older countries. This seems a bit odd, too, when we contrast conditions here with some in the old country. We use all manner of labor-saving machinery, so as to reduce the burden of physical work, and still employ men mainly, in brickmaking. Some of the older countries, especially in Germany and Hungary, very little in the way of labor-saving devices are resorted to and girls and women are used extensively in brickmaking, and do much of what would be termed laborious and burdensome work. Even in England they had entered the industry some time before the war, and since the war they have entered it quite extensively.

Ordinarily, in this country there is employed a total of about 150,000 wage earners in the clayworking industry, and of these a little more than 7,000 are women and girls. Practically all of the women and girls, however are employed in the potteries, and very few of them enter brick work proper. Unfortunately for making the distinction positive, in compiling the census figures of 1914, the clayworking industry was not separated into specific items, but grouped as a whole, so there are no figures on the exact number of women engaged in brick work proper. From a general knowledge of the industry, however, we may readily deduce that practically all of the women employed as wage earners in the industry heretofore were to be found in pottery and tile plants and in doing what is termed the lighter work.

Now, the question is, to what extent will we be dependent upon women to fill the place of men in this country, and to what extent may the women enter advantageously into brickmaking and clayworking?

These Girls do Not Find it Difficult to Trundle a Barrow.

Over in England, war conditions have led to between a million and a half and two million men being replaced by women in all lines of service. Something like half a million of this replacement was in the industries proper. Another half a million in commerce, some entering agriculture, some the transport service and some the government service. Prior to the war period there were about three and a quarter millions of females employed in England out of a total population of probably 40,000,000. At the present writing this total has been swelled to between four and a half and five millions.

While no figures are available as to the number of those who have been employed in brickmaking, and the extent to which the number has been increased because of war conditions, we have pictorial evidence that they are entering in and doing what we normally term a man's work in the brickmaking in that country. We find them at machines, with trucks, and handling and piling brick; in fact, piling them both ways, in the kilns for burning and out of the kilns onto the piles for storage and shipment.

It is refreshing to note, however, that they have introduced the gravity conveyor idea into England, which has helped take the burden out of work and put it on a better basis generally than exists in some of the older countries.

The brick industry in England was perhaps more seriously affected by curtailment than it has been here. Indeed, ordinary building operations were practically put under the ban. No new buildings can be erected in England without a government permit, so naturally only the urgently necessary building is being done. This called for curtailment and reorganization of the clayworking industry all around. Yet, notwithstanding this curtailment, it is plainly evident that they have had to draw upon the women of England to help solve the problem of labor in brickmaking and clayworking generally.

Just to what extent we may have to do the same thing in this country remains to be seen. All around us everywhere women are entering industries. They are not only taking a place in woodworking shops and factories, but have actually entered mill work at feeding machines, piling and handling lumber, a task which in many instances is more burdensome than that of handling brick. Moreover, while brick handling seems at the first glance to be rough and rugged work, we are rapidly taking the burden out of it in this country with conveyors of different kinds—ball-bearing trucks, power-driven trucks, steam shovels and power appliances generally, which take care of most of the hard, heavy labor.

One of the Easy Jobs.

One of the possibilities of the times is that before we are through with the war and war conditions so many of our able-bodied men will be called directly into war service that the carrying on of industry and commerce will make essential a wider employment of the women folks in this line, even to the extent of their filling quite a prominent place in the clayworking industry of this country.

The accompanying letter from Architect Jacob Kopf, of Indianapolis, telling of his observations in the brick district of Great Britain, will be read with more than usual interest by readers of The Clay-Worker, who know Mr. Kopf, now Lieutenant Kopf, as the author of "A Book of Distinctive Brick Homes," and a later publication, "Types of Brick Homes," published by the National Building Brick Bureau.

An American Architect Now in Service "Somewhere in England" Is Impressed with the Beauty of English Homes.

Editor The Clay-Worker:

Dear Randall—Have seen so much good brick work recently hereabouts, that I know would be of interest to you, that I will attempt a little description of it. The company to which I am assigned is at present encamped in the brick district, "Somewhere in England," and everything is built of clay, from the brick foundations and walls to the beautiful clay tile roofs.

Girl Bricksetters.

Some of the buildings are, of course, hundreds of years old, and the most interesting feature about them, to me, is that the brick are as bright and clean and well preserved as the day they were laid in the wall. All the brick are laid up in bond, either "Flemish" or "English." The brick used are a beautiful, variegated red-brown, and in some cases that I have observed the darker shades have been selected and used in interesting pattern designs.

It is evident from the work hereabouts that the craft of bricklaying has been developed to a high degree. Occasionally one sees a brick cottage with a thatched roof, but in general clay roofing tile predominates, either the shingle tile or an interlocking type; or sometimes one sees the half-cylindrical, or what we call the "Spanish tile." No wood shingles, to my observation, are used in England.

Nowhere have I seen either brick or tile selected for uniformity of color, but it is apparently all what we call "kiln-run," laid up in white or gray mortar, the joints being about one-fourth inch thick.

Nothing more beautiful can be imagined than these picturesque cottages and town houses, surrounded with their well-kept gardens (for it is spring here now). The brick garden and estate walls are generally coped with molded brick, and one will often see long reaches of high brick walls, with beautiful brick entrance posts and wrought iron gates. Everything is built of brick, even to the mail boxes! There is a sort of moss or lichen which spreads over the walls and particularly the tile roofs, which adds considerable color and sparkle to the buildings.

Window openings are generally without much reveal, the wood frames being molded and set almost flush with the face of the wall. The brick craftsman seems to be very versatile in building his chimneys (of which latter even the most modest dwelling is well supplied), and no two chimney tops are alike in design—even the pots are of varying design on the same chimney. In fact, it is quite evident that the British brick mason is an artist and builds "with loving care" everything he touches.

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Toting a Heavy Load Good Naturedly.

This organization is made up largely of bricklayers from Indiana and the neighboring states, and, coming as they do from a section of the United States where brick is used extensively, you can imagine the great interest they are taking in the work hereabouts.

I hope everything is progressing well with you and yours, and would be pleased to hear from you. Tell me how our book has progressed by now. I would like to receive a copy of it, also an occasional copy of your very good "Clay-Worker."

With best regards, As every yours,

JACOB E. KOPF,

Lieutenant Third Construction Bricklaying Company, Aviation Section, Signal Corps, American Expeditionary Forces, "Somewhere in England." March 31, 1918.

BRITISH MARKETS FOR BRICK MACHINERY.

OUR DEPARTMENT OF COMMERCE at Washington has been making inquiry through the consular service as to the possible opportunities for marketing brick machinery in Great Britain. It should be taken for granted, of course, when reviewing these prospects that no very great call will be heard for brickmaking and clayworking machinery until the end of the war is in sight. Brickmaking and the clayworking industry generally have been more seriously curtailed in England than here in the United States. So there is no call for enlargement at this writing, but because of the urgent need that will be felt for housing immediately when the war ends, and because of the scarcity of help, there will likely be a great call, especially for labor-saving machinery, immediately following the end of the war.

It should be said in this connection, too, that seemingly England has taken up more with labor-saving machinery than other of the older countries. It should be borne in mind, also, that the main opportunity for American machinery in England will come for such machines and equipment as promise to increase capacity and reduce the amount of labor involved.

The Bradford District.

The consular review at hand covering this subject opens with a report from Consul Augustus E. Ingram, of Bradford, England, who says that the principal building material used in that district is stone. In fact, stone structures characterize that district. The reason for this is the availability of stone in that part of England, and the stone has been extensively used, not only for walls, but also in slab forms for roofs on the old buildings.

Still, he says, that while stone is the principal material for outer wall construction brick is used for lining and for internal partition walls. Brick is also the principal building material used for factories and mills, and most of the factory chimneys of modern type are built of brick.

It seems that the brick industry in the Bradford district is largely common brick and fire brick. The fire brick industry is of some importance in that district. So far most of the machinery and methods here seem to have been of English make, though perhaps they have included American labor-saving devices, especially for conveying purposes.

Incidentally, mention is made that the government is formulating a national housing scheme, which will call for anywhere between 150,000 and 200,000 new dwellings when the war ends, and this will naturally stimulate brickmaking. The housing scheme is said to include a proposition to erect ten villages on lands surrounding Bradford, to contain approximately 1,000 dwellings each, of the bugalow type, together with schools, churches and other community buildings.

A list of the manufacturers of brick and brickmaking machinery in Bradford can be had from the Bureau of Foreign and Domestic Commerce at Washington, by referring to File No. 99294.

Bristol and Vicinity.

From Bristol, England, Vice-Consul Robert E. Freer reports that the brickmaking industry is quite extensive. At present, of course, there is ample capacity to supply the demand. After the war, however, he expects the demand will increase enormously; also he reports that plans are under way in practically all of the cities and towns in Great Britain to build office buildings and residences after the war. Further, he thinks, the demand for brick in France, Belgium and throughout Europe will be great, and that the manufacturers of Bristol and its vicinity will do considerable shipping of brick. In short, he thinks that this district presents an attractive field for any American firms who wish to install improved methods for manufacturing and handling brick. He said it would be a mistake, however, to assume that brickmaking is being done there by antiquated methods. He reports sixteen firms in Bristol and vicinity making brick and tile, and as a rule they are wide awake and keeping up with inventions to save labor, time and trouble. They seem not only willing, but anxious, to enter into correspondence with or talk to American firms or their representatives regarding labor-saving devices in brickmaking machinery, and also in the loading, handling and transportation of brick.

A list of firms engaged in the manufacture of brick and tile in Bristol and vicinity may be had from the Bureau of Foreign and Domestic Commerce by referring to File No. 99356.

In the Scotland Field.

From Dunfermline, Scotland, Consul Howard D. Van Sant reports that the market for brick machinery in that district is largely controlled from Glasgow, Edinburgh and New Castle. He says there are several new yards in the district, and he thinks there should be a good chance to introduce brickmaking machinery at the close of the war, to replace hand labor.

From Glasgow, Scotland, Consul John M. McCunn reports brickmaking as quite an extensive industry, with good demand in normal times. Building brick, he says, is made by machinery, usually of English make. He says there are perhaps very few Swedish, American and German machines in the country. There is a noticeable tendency to use more machines to replace hand work and to take up with labor-saving devices generally. He thinks that in a few years it will be difficult to find any hand-made brick in that district. What the brickmakers there seem to want is a machine-made brick that will closely approximate in texture a hand-made brick and not be too dense and heavy. He thinks there is an opportunity for machinery of this type in that district.

Liverpool Looks Good.

In Liverpool, it is said that the greater part of the material used for building consists of brick. The use of reinforced concrete has been extended in the erection of buildings for commercial purposes, but up to the present time Consul Horace F. Washington, of Liverpool, says the aggregate use of concrete is small in comparison with the use of brick.

His report indicates that machinery is used quite extensively for brickmaking, hand labor being employed only in small isolated plants. Most of the machinery used so far has been of English manufacture. He predicts that there will be extensive production when the war comes to an end, which should furnish an opportunity, especially for brick machinery, that will help save labor and reduce cost.

Lists of machinery merchants, building contractors and brickmakers in Liverpool district can be had from the Bureau of Foreign and Domestic Commerce at Washington, by referring to File No. 99551.

Around Nottingham.

Consul C. M. Hitch, Nottingham, England, says:

"The principal building materials used in the United Kingdom are stone, brick, tile and terra cotta. There is, consequently, a steady demand, especially in normal times, for brickmaking machinery. There is very little, if any, building going on at the present time in the way of residences and other private property, owing to government restrictions, but there is a considerable demand for brick for government purposes. With the cessation of hostilities, the demand will be practically unlimited, as it is reported that there is a great shortage of buildings throughout the country, especially small residences for the working class.

"The kinds of brick used are wire-cut, semi-dry, white, pressed facings and pressed. There is also a limited demand for blue brick and ornamental brick of all descriptions. In addition to its use for building purposes, brick is also used quite extensively for sewers and conduits.

"There are about twenty firms in the United Kingdom engaged in the manufacture of brickmaking machinery, five being in the Nottingham district. About twenty-six brickmaking plants are located in this district, but twenty-five are closed down at the present time on account of the shortage of labor. The greater portion of the brick used is machine-made, as there is very little demand for hand-made brick.

"All brickmaking machinery used in this country is of domestic manufacture, and there appears to be no demand at the present time for foreign-made machinery. It is claimed by some of the manufacturers that foreign-made machinery is too light for English clay. Steam power is generally used, as this power can be produced cheaper than electricity.

"It is estimated that there will be 300,000 buildings to be constructed when the war is over, and all brickmaking plants will be taxed to their utmost capacity. It is possible that many new plants will be constructed to cope with the demand and that foreign manufacturers could find a market here, provided the quality and the prices of their machines would be attractive to local purchasers. One of the most successful British-made machines on the market cost complete, before the war, £400 (nearly $2,000); this machine now costs about £600 (nearly $3,000).

"In normal times the Nottingham district can product about 15,000,000 brick per week; but at present only about one-third of that quantity is being turned out, owing largely to the shortage of labor and the restricted demand."

Writing from Sheffield, England, Consul J. M. Savage says:

"The more important buildings in Sheffield are built of stone and have a lining of cheap brick. Workmen's houses, as a rule, are built of brick, and many walls (used instead of fences) are built of the same material. In connection with the steel industry, carried on both here and throughout this consular district, there is a large consumption of fire brick, and clay molds are used extensively in the manufacture of steel by crucible process. In the country districts the houses are built almost entirely of stone, as a rule omitting the brick lining, and barns and outhouses are also constructed of stone."

HOLLOW TILE TO BE USED IN NEW WAR DEPARTMENT BUILDINGS AT WASHINGTON.

THE WAR DEPARTMENT at Washington announces that it has decided to adopt, in place of the reinforced concrete at first favored, a practically fireproof type of construction for the workers who are to be housed in the great new $5,000,000 buildings, and will use hollow tile. In the temporary buildings erected in Washington up to this time cement, wood and metal lath have been used. With the hollow tile the construction is fully as rapid and the cost only about one-third more than for the wood type buildings.

The structures are now being rushed up as fast as an army of workmen can erect them. They are to cover them all in the section from Third to Sixth street, formerly known as Seaton Park, and the section south of the Washington monument, known as Potomac Park, adjoining the speedway.

On the Seaton Park site there will be 18,500 workers housed in the quick-construction office buildings by October 1, and the Potomac Park buildings will be occupied by 14,000 workers by June 1. Practically all the latter will be employes of the Ordnance Department and Signal Corps. Still other buidings are being planned for erection in Potomac Park which will house probably 20,000 more workers. These structures will also be built of the hollow tile.

HOUSING AND HOME BUILDING.

While Building for the Period of the War, Building for the Future Should Not be Entirely Overlooked.

THERE ARE TWO building problems before the country at the present time. One that is immediate, and the other, while not so urgent, is really of more importance. The one is the immediate housing in certain congested working centers of the people carried there to help out in war work of various kinds. This involves in many instances quite a lot of temporary structures which are made available quickly and are expected to be destroyed or replaced with something else in the future. The other is home building for the future.

Perhaps nothing will serve better than this to emphasize certain points of difference and distinction between mere housing and home building. Housing for the time being in certain congested centers is one thing, and home building for the future greatness of the country is something entirely different. By the time we are through with the war, too, we will perhaps be more strongly impressed with this than ever before, and when the new era of home building dawns it will very likely be on a more thoughtful and analytical basis and include more of the elements of permanency as well as artistic beauty and scientific utility.

There will be some permanent building along with the solving of the immediate housing problem in those cities in localities where congestion has resulted from war activities. There has already been developed a sort of government standard for permanent housing which includes nine general house types ranging from the single family house to boarding houses and hotels.

Standards in this case are set up to facilitate speed and economical construction and are designed to include most all of the modern sanitary ideas as well as a share of conveniences. The specifications provide among other things, for the use of brick, terra cotta, stone and concrete, preferably, but that frame, clapboard, shingle and stucco is permitted for detached and semi-detached houses not over two and a half stories high. Party walls between attached houses in rows or the groups to be of brick and terra cotta, stone or concrete.

While the standardization idea of the government will facilitate construction and perhaps make for some economy, and allows for some variety, it will not appeal very strongly to the home builder of the future, because any standard of design leads to monotony. The greatest and most desirable element in home design is difference and individuality. The shortcoming of all industrial housing and town building is found in its standardization, which leads to monotony, both in the laying out of grounds and the designing of houses. This is one of the things which makes the distinction between housing and home building.

Meantime, while the Government is standardizing and helping out with the hurry plans for immediate housing in crowded centers, others are giving thoughtful attention to the home building of the future. And it is this which is entitled to more attention right now than it seems to be getting.

Over in France they are already giving attention to reconstruction and early in the year they started competitions and expositions with a view of developing plans and ideas, especially for small home building.

The idea of the French as portrayed in an article by M. Lavedan and reprinted in the Journal of the American Institute of Architecture, is pretty well set forth in the following:

"Bread made necessary the oven, and flour, the mill. The fields, no sooner cleansed and put back in a normal state, would demand the farm buildings; and everything depending on the sun and the earth, both beasts and people, would desire the roof and its shelter. The first scheme was this naturally indicated. The inn, the bakery, the cafe, the smith's forge, and, above everything, the houses of the peasant, of the farmer, of the rural worker; such were the humble and sovereign edifices to be first erected, the pillar and support that should be determined and placed, the nucleus around which would group themselves afterward, little by little, in the near and far-distant future, the different and successive elements of the resurrected village. What task more important than the careful and studied reformation of all these cells, broken and obliterated! What noble attraction, what magnificent stimulus did the difficulties themselves present! No! That was not an ordinary competition, one of those cold and common tests that concern but the hand and the intellect and leave the heart a stranger. It has been absolutely necessary in this case, that, in order to succeed, the heart should aid the mind and direct the hand."

While we in this country have no devastated territory, the buildings of which must be restored, we have an immense agricultural and industrial territory where building operations have been automatically reduced because of war activities, and where there should logically be a revival of activities to make up for lost time when the war is over. These are things we should be giving thought to and making plans for.

From time to time in the past few years different state and municipal authorities have been encouraged to take up the subject of special community home building for wage earners and though the war has materially interfered with plans of this kind, they are still getting attention and we may expect an era of active interest from the same sources as the war draws to a close and we turn attention once more to home building.

Meantime, some of our enterprising brick manufacturers have been blazing the way to better home building with literature and booklets calculated not only to inspire interest in the building of permanent homes, but to furnish specific ideas and plans for the work.

A while back there was received and reviewed in these pages a publication gotten out by the West Coast Brick Manufacturers, devoted to the brick homes of moderate cost. This publication includes both plans and pictures of homes of modest cost, built with brick, together with comparative figures of cost as between brick, lumber and other building material.

Another booklet along the same line that is timely and a decided addition to the good work is one gotten out by the Standard Brick Co., of Macon, Ga., devoted to fireproof brick homes for the people.

This booklet contains plans and detailed drawings which show how to build a residence that will be substantial, handsome, fire resistant and at a little cost. Special attention is given in it to hollow walls made of brick, something that is comparatively new in this country but has been known in Scotland for many years.

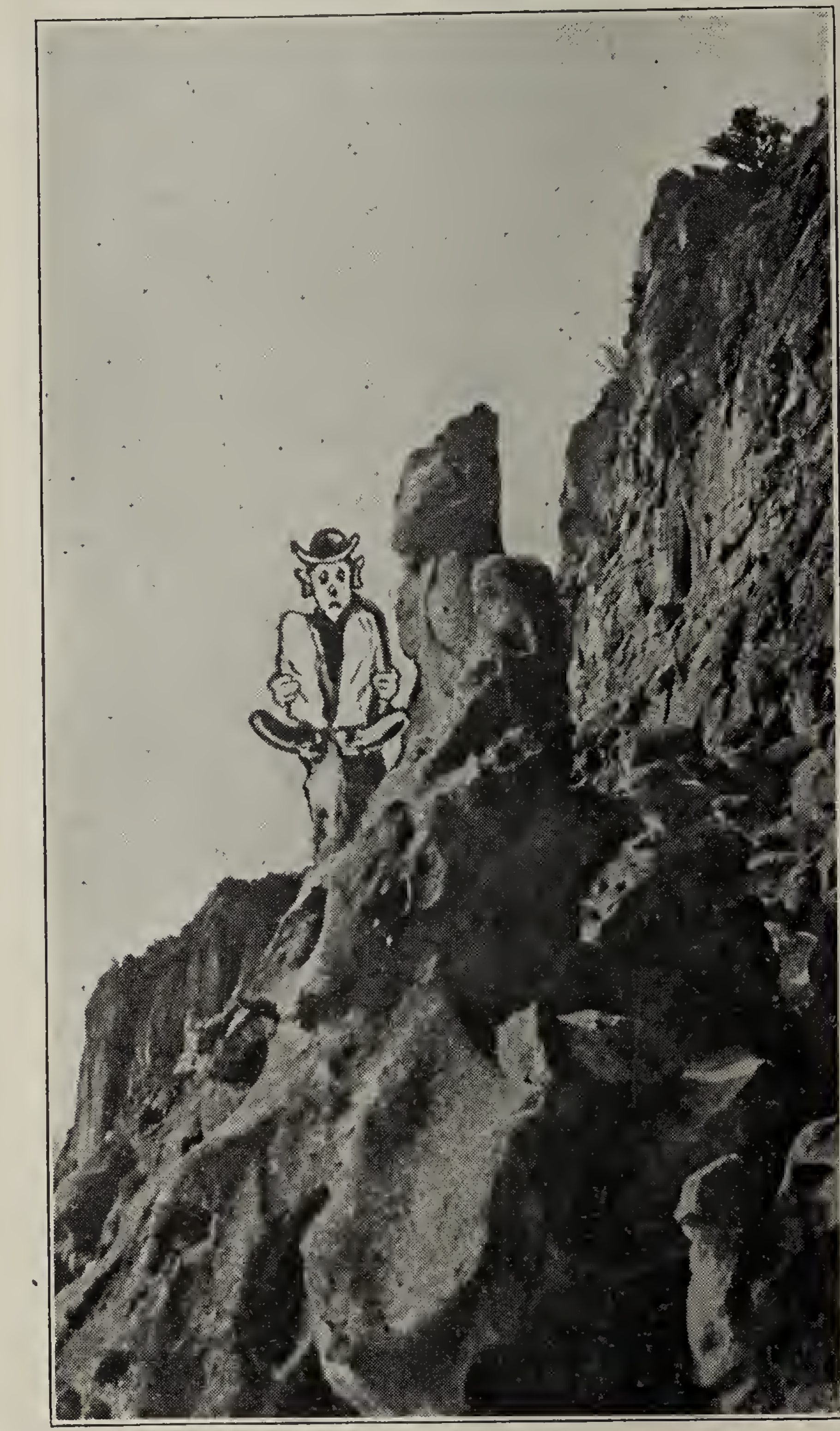
Here we have from the west country and from the south country two splendid examples of promoting interest in home planning and home building with brick, which are decidedly encouraging examples that may well be followed by others.

It is freely predicted that pretty soon after the war is ended there will be a great era in home building. Let us make this home building proper as distinguished from mere housing. The way to do this is to get busy now and keep busy working up ideas and plans both for the homes themselves and for ways and means to promote interest in home building which will lead to the ultimate goal of permanency in homes in building with brick.

BUTTON HOLE-TALKS.

Gates Not Quite Satisfied With His Place on a Pinnacle.

IN THE FRIJOLES, high up from the bottom of the Canon and yet with a sheer cliff rising high above them, there stood out a mass of grotesquely formed rocks. A winding, breathless, climbing trail led up and back of them to the closely clustered caves of the Snake Klan; a trail worn deep by the moccasined feet of generations of men long forgotten. After I had explored the caverns, I was wont to come out and study these grotesque masses of stone, carved by nature with sun and frost, by storm and tempest, and was especially attracted by one massive figure that seemed to sit and guard the Canon, gazing solemnly out over it in a judicial, masterly, dignified manner. I elected to climb to another pinnacle on which to seat myself and thus form a group by putting a clay man up beside a stone man. He however, seemed more at home or in place than did I, fitted in to the landcape more consistently. He had been formed by storms and winds of the canon, while the curves and angles of my anatomy had been trimmed by prairie storms and city whirlwinds. Turning the sharp corn-



The Author as he Sees Himself on A Pinnacle.

ers of the streets and alleys of the city does get you into such angular ways, and I have noticed that, when somewhat absent minded, in trying to go through one of these circular doors leading into a bank, I have frequently met myself coming out as I started in. This, however, may have resulted from my being in a strange place, and anyway, is wandering from the subject.

Glancing over at the other member of the group, I was struck by the dignity of his poise. A sentinel, firmly attached to his post. This was entirely lacking in my own case. There was no firmness in my attachment. My attitude was entirely different from his. My legs were too long and lacked flexibility. My feet were too big and there seemed to be too many of them, there wasn't room for them and they didn't at all fit the pedestal. Evidently in these monumental effects the figure and the pedestal should be formed together. Evidently I was too young for my pedestal.

Looking over at my companion, I could but note how gracefully he fitted on and blended in with his pedestal and how little fitting on and blending in there was in the case of my pedestal and myself. He had a dignity and poise which I felt I lacked. He had been there longer than I and it occurred to me that possibly, if I stayed long enough, I too might blend, but it looked like too sedentary a job for me, and I felt that I should ultimately tire of his companionship. I felt that he was about the worst one I had ever Button Holed, was as bad as the Sphynx. Both just posed, looked wise and answered no questions. All I could do was to just use my imagination, but I had used that until it was all frazzled, ragged and worn out.

Time had not counted at all with the stone man beside me. Firmness was his leading, and only, characteristic. He stayed for further orders. He never gave up his post. The "Boy on the Burning Deck" was a fickle racer as compared to him, but he wasn't bragging about it.

He had looked down from his lofty station on the man who planned the building of the Community House. Had watched the marshalling of the company in the gathering and placing of the stones. Had watched it grow in size and form to its completion. Had seen it populous and happy with its community settled and content. Had seen the fields of corn planted and tended to the harvest. Watched the women at their grinding stones as they prepared the food for their households, looked out on the children at their play, inspected, from his lofty height, their ceremonial dances as they arrayed themselves in the paraphanalia for the mystic rites. The beating of their drums vibrated about his unhearing ears but, as there was nothing but stone inside, he neither felt it nor did it record itself in the filling of his solid dome. Like the Sphynx in Egypt, he had looked out at all the stirring scenes of history, unmoved, unresponsive and without comprehension. He has nothing to tell us, for although he has the rough outward form, he hasn't any of the inside works that mean comprehension and retention of facts and emotions and, not having them inside, ready for use and expression, he couldn't use the lips to vocalize them if he had them. For all we know, he may have been worshipped by these cave dwellers as their God. He possessed one great attribute, that of mystery, which has always been the leading requirement of worship. That he was stone didn't matter; men have ever worshipped form regardless of the material that composed and embodied it, whether stone, clay, gold or, as is often the case, daintily arrayed female beauty. Anyway, he could keep a secret and he was a most reliable sentinel.

I would have moralized more, but right then some of my feet slipped and I fell off my pedestal. GATES.

Uncertainty adds zest to business but it doesn't always add profit.

WESTINGHOUSE EMPLOYES RAISE TWO MILLIONS FOR LIBERTY.

A TOTAL OF $2,144,800 subscribed by employes is the record of a ten-day's Liberty Loan Campaign in the organization of the Westinghouse Electric and Manufacturing Company. With 30,384 subscribers from the company's various plants and district offices, the "bogie" set for this and the total subscription figures was largely exceeded.

Mass meetings at the noon hour, addressed by four-minute speakers recruited from the shop employes, were an important feature of the campaign. At one such meeting, held at East Pittsburgh works, several thousand people listened to Sousa's Band, and were addressed by Major Watt of the Gordon Highlanders. The Westinghouse and Scotch Kilties Bands played at other similar meetings.

Due to the general enthusiasm and particularly to the efforts of the campaign committees, many departments were able to display "100 per cent." signs; where one or two persons hung back, the force of public opinion quickly brought them into line.

About 1,200 of the company's women employes marched in the Liberty Loan Parade in Pittsburgh on April 20, carrying banners designating their work, and were accompanied by both the brass and bagpipe bands.

ELECTRIC TRUCKING.

There are two forms of electric trucking, that of trucking on open floors and roadways and trucking upon tracks. Also there are two forms of power application, the use of a trolley and the use of a storage battery. Ordinarily one would say right off the reel that the trolley system is the thing for trucks, cars and locomotives used upon tracks, while the storage battery is a necessity resorted to for driving trucks in the open, where obviously the trolley cannot be used, with, of course, the exception of straight runs on regular roadways. This would be a mistaken assumption, however, for there are places where it is found advisable and economical to use the storage battery even for locomotives running on tracks.

It may be stated as a sort of truism that the trolley system is the most economical in power and that the storage battery drive is more economical in labor. The storage battery truck is a self-contained machine, consequently, it can be taken wherever it is needed and in this way it is a much greater convenience and serves a much wider range of uses than would be practical with the trolley. We can easily understand this in its application to what is termed inner plant trucking, that is the use of trucks running from one department to another and doing odd jobs of pulling and hauling here and there on floors and roadways. Where the truck is mounted on a track it becomes in substance a locomotive. Undoubtedly the widest use and the best service generally, especially when accompanied with power economy, is through the application of the trolley. There comes occasion, however, in mines and quarries and open cuts, where it is difficult to erect and maintain trolleys and where with the storage battery truck you can get into cuts and branches on a temporary track and render much useful service that would not be practical, or rather it would have to be done before the trolley could be established. So there is really a wider range for the use of the storage battery for trucking and locomotives than many are inclined to think, and it is worth while to keep this thought in mind. Knowledge of the fact that a trolley system of electric transmission is the most economical in power may often cause one to shut his eyes to the possibilities and advantages of the storage battery truck and thus miss an opportunity to develop greater efficiency and save man power.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXV.

COMPARISON OF FURNACE AREAS.

A 30-FOOT round down-draft kiln has about 650 feet of floor area, exclusive of the bag walls. An average setting height of 9 feet will give 5,850 cubic feet. On the basis of the first rule, the area of grate surface of such a kiln for cone 1 ware will be 8.8 square feet, or nine furnaces of 10 square feet area each, reducing to eight furnaces for temperatures below cone 1. Cone 5 temperature ware will require ten furnaces; cone 10 temperature, twelve furnaces; cone 26 temperature, sixteen furnaces.

A ratio of one foot of grate area to four feet of floor area would require sixteen furnaces, and a ratio of 1 to 8 would require eight furnaces.

Either of these rules in the hands of a competent engineer, who will take into consideration the kiln tonnage, time required to burn, and the quantity of fuel required per ton, will give a kiln and furnace design well within reasonable limits of a practical and economical rate of combustion.

Let us consider furnace areas for a 30-foot round kiln on the basis of fuel and time given on a preceding page. We will assume 20 per cent. of the time is required for the water-smoking, during which time the rate of combustion is slow, and we will make no allowance for the fuel used during this period.

The results are as follows:

Common Brick—240 Tons.

Coal	Time	Grate Area	No. of Furnaces
150 lbs. coal,	4 days	47 sq. ft.	5
400 lbs. coal,	4 days	125 sq. ft.	12
400 lbs. coal,	6.4 days	78 sq. ft.	8
Average		83 sq. ft.	8

Face Brick—210 Tons.

Coal	Time	Grate Area	No. of Furnaces
300 lbs. coal,	4.8 days	70 sq. ft.	7
700 lbs. coal,	4.8 days	160 sq. ft.	16
700 lbs. coal,	9.6 days	80 sq. ft.	8
Average		103 sq. ft.	10

Paving Blocks—200 Tons.

Coal	Time	Grate Area	No. of Furnaces
500 lbs. coal,	4.8 days	109 sq. ft.	11
800 lbs. coal,	4.8 days	173 sq. ft.	17
800 lbs. coal,	9.6 days	87 sq. ft.	9
Average		123 sq. ft.	12

Drain Tile—75 Tons.

Coal	Time	Grate Area	No. of Furnaces
350 lbs. coal,	1.6 days	53 sq. ft.	5
800 lbs. coal,	1.6 days	195 sq. ft.	19
800 lbs. coal,	4 days	79 sq. ft.	8
Average		109 sq. ft.	11

Sewer Pipe—60 Tons.

Coal	Time	Grate Area	No. of Furnaces
800 lbs. coal,	4 days	62 sq. ft.	6
1500 lbs. coal,	4 days	117 sq. ft.	12
1500 lbs. coal,	6.4 days	73 sq. ft.	7
Average		84 sq. ft.	8

The drain tile estimate is open to criticism because only small kilns can be burned off in two days, and in no case would the maximum quantity of fuel be burned in this short period of time, and the other intermediate estimates are open to the same criticism, but in less degree. These estimates bring out two facts:

(1) The combustion rate of 8 pounds of coal per square foot of grate area per hour is a maximum for average practice, because if we were to figure a higher rate of combustion, the minimum fuel-minimum time operation would require an absurdly small grate area not found in practice anywhere. The maximum fuel-maximum time operation gives results approximating general practice, being under, however, rather than over; and if we were to increase the rate of combustion 50 per cent. the grate area would be less than that we know to be practical. The intermediate figures would indicate a higher rate of combustion, but it seldom happens that the maximum quantity of fuel is burned in the minimum period of time upon which assumption these intermediate figures are based.

(2) The rules given for grate areas will give the proper furnace power if one will take into consideration any unusual conditions and make allowance for them.

Furnace Doors.

The furnace door is the most important feature of the furnace, because it is the only movable feature and easily gets out of shape, with the result that large volumes of air are being drawn into the furnace around the door, and of this we have no control. An ill-fitting door wastes in fuel each burn the cost of two good doors.

A furnace of the inclined grate bar type without a door is preferable to a door which does not fulfill its purpose. The former we control by banking up the coal, and if the combustion gases are investigated to determine the most economical firing conditions, the fire mouths can be banked to maintain this condition.

Secondary air is necessary, but it is important that we have it under control, which we cannot have through an irregular opening around a badly warped door or door frame.

Terra cotta, pottery and abrasive product kilns all under roof and enclosed generally use a substantial cast iron frame and swing door similar to a boiler furnace door, the door being lined with a cast iron perforated shield set away from the door, or a fire clay block may be used.

Such doors are not satisfactory for outside kilns exposed to all atmospheric conditions, but it must be mentioned that the doors used in outside kilns are frequently much less substantial than the doors used on the above mentioned kilns. Whether the trouble is due to a flimsy door equipment or to severe conditions, the fact remains that cast iron swing doors have been largely abandoned in the construction of outside kilns, except in scoved and up-draft kilns.

We frequently see thin sheet iron plates used for furnace doors, which are in a condition to discredit a scrap pile and which attached to a kiln are wasting the profits of the business.

A cast iron plate, ribbed to reduce warpage, and grooved on the bottom or with lugs to slide on a projecting angle plate makes a fairly good door. The front of the furnace wall is battered so the plate retains its place by its own weight.

A good door is made of a shallow cast iron box lined with thin fire clay brick. This is hung by a trolley to the top wall of the furnace front, or it may be hung by a wire attached to a hook in the kiln wall higher up, and projecting from the wall just enough to clear the front wall of the furnace. Similarly brick or a clay block may be bound with an iron band and hung on a trolley or by a wire as above mentioned. A large fire clay slab bound with an iron band to be raised and lowered by a chain or flexible steel rope, using a grooved pulley and counter-balance, is an excellent door. This is the type of door used in heating furnaces.

Construction of Furnace.

The furnace lining should be built of the best quality of fire brick laid in fire clay mortar of the same quality as the brick, and the bed joint should be as thin as it is possible to make it. The wall should be not less than 9 inches thick and built independent of the kiln wall.

It is customary in building the main kiln wall to complete and bond in the furnace wall as part of the main wall, particularly the main wall lining and the furnace lining. This is essential in order to turn the inner furnace crown satisfactorily. The furnace walls may be carried up with the main walls, and crowned without bonding the former into the latter. With such a construction, when repairs become necessary the furnace walls may be removed and rebuilt without tearing an irregular, jagged hole in the main wall, which is difficult to fill up in a substantial manner.

The furnace inner crown should be a single course of arch brick and separated from the outer supporting crown by an expansion space. A 9-inch crown of wedge brick or a bonded arch has the objection that the inner ends of the wedge brick or the inner course of the bonded arch will shrink under the intense heat, and the inner points will break off, or the inner courses slip down and out, to the destruction of the crown. The outer arch is the kiln wall support, and there should be no occasion to remove it in making furnace repairs.

More substantial arches can be built of special shapes, using two or at most three blocks for the skew and arch. A single brick rowlock arch over the special block arch will support the main wall and provide vertical expansion space for the furnace walls and crown.

When furnaces project from the main wall, they should be held in place by a band or channel plate.

Round kilns are usually built with a hub which includes the furnace. The furnaces thus are prevented from spreading by the kiln walls, but in addition there should be a band at the grate bar level.

Projecting furnaces are frequently seen in rectangular kilns, and they may readily be held in place by a channel plate at the grate bar level, extending the full length of the kiln. Between the furnaces, stay rods connecting the channel to the main vertical kiln buck stays hold the channel in place and thus brace the furnace wall.

It is a good plan to batter the furnace front, which reduces the tendency to draw off, and also the doors will hug the wall instead of hanging away from it as happens when the wall overhangs.

(To be continued.)

BUILDING BRICK SIZES.

A dealer in building material who is also a contractor and builder, when engaged in a conversation recently about brick and brick work, raised this question: "Why don't the building brick manufacturers produce a portion of their brick twelve to thirteen inches long?"

When asked for definite specifications and reasons, he made two interesting points. The main one was that with a percentage of brick made once and a half as long as the present standard, it would be easily practical to use these as headers, tying a wall together and leaving an air space between the outer and inner courses, which would insure a dry wall and a better form of construction generally.

The other point he made had to do with the hardness of well manufactured brick of today. He said the brick furnished them by a nearby manufacturer was so hard that it could not be broken with a trowel, making it necessary for a bricklayer to carry a hammer along for this purpose. If some of the brick were made twelve or thirteen inches long, the joints could be broken and the bond secured without so much breaking of brick on the job.

Moreover, he argued that the longer brick would lay up more rapidly than standard lengths used today and produce a better wall. The points made and the question raised seem interesting enough to merit their repetition here so the brick fraternity itself may have an opportunity to give the matter thought, and those who desire to do so can make answer.

TRUCKS AS SELLING AGENTS.

Perhaps the average brick manufacturer has not so far viewed the motor truck in the light of being a factor in promoting the sale of his product. It has taken the lumber yard people to furnish a demonstration of this.

Retail lumbermen serving country districts have found that the use of motor trucks has served among other things to help them make sales to busy farmers ten and fifteen miles away. The farmers, busy with their own affairs, have willingly paid the price to make deliveries by truck of needed building material, and have in instances bought the material because of this fact, whereas without it the sale would not have been made because the farmers were too busy to go haul it.

This is an idea worth taking home and thinking about by brick manufacturers. It is a phase of the truck situation that perhaps has not been given the attention it deserves. If the truck will not only help in making deliveries, but will also render assistance as an agency in extending sales it will be serving a purpose and it should make a strong appeal at the present time.

THE MANUFACTURE OF SEWER PIPE

STRENGTH OF SEWER PIPE.

Bulletin 47—Engineering Experiment Station of Iowa State College, at Ames, Iowa, gives the results of a long series of experiments to determine the supporting strength of sewer pipe in ditches, and methods of testing sewer pipe in laboratories to determine their ordinary supporting strength. The bulletin also gives tests at Ames, Iowa, of the supporting strengths developed by sewer pipe and drain tile in actual ditches with different pipe laying methods.

There is also appended a series of tables giving safe working load, ordinary maximum loads on pipes in ditches, standard ordinary supporting strengths of sewer pipe for different ditch conditions, etc.

In other engineering work, the practice is:

First, to determine the loads to be carried; and, second, to prescribe the use of structures of such definitely known strengths as are considered amply sufficient to carry the loads safely under all contingencies.

In pipe sewer construction, however, engineers have been obliged to use rule of thumb methods to provide for the structural stability of constructions which have cost many hundreds of millions of dollars, and which are vital to the health of hundreds of millions of people.

Investigation has been carried on for two years, including all depths up to 10 feet for gravel filling, and up to 21 feet for clay filling. A 10-foot section of 24-inch sewer pipe under 21 feet of clay filling has been under daily observation through two winters and springs, and during one summer and fall.

The results of the investigation completely confirm the reliability of the theory of loads on pipes in ditches stated below.

The Theory of Loads on Pipes in Ditches.

For convenience, a summary statement of the theory of load on pipes in ditches is now presented.

The general ditch conditions on which the mathematical theory of loads on pipes in ditches must be based are shown in Fig. 2 (reproduced from Bulletin No. 31, of the Iowa Engineering Experiment Station).

Any pipe in a ditch may be considered as made up of four equal sections, of 90 degrees each, two horizontal and two vertical, as shown in Fig. 2. The two vertical sectors, owing to their position, carry only a negligible amount of the load. The foundation pressure is distributed over the bottom 90-degree sector with greater or less uniformity, depending on the care in pipe laying. The load on the pipe, due to or transmitted through the ditch filling, rests almost entirely on the top 90-degree sector, with intensity somewhat greater at the center than at the sides.

It has been proven by actual experiment and by careful study of pipe in actual ditches that the pipe in the ditch is so much more rigid than the ditch filling at each side of the pipe (between the two vertical 90-degree sectors and the sides of the ditch), even with careful tamping that the pipe carried practically all of the vertical load at the level of the top of the pipe, due to or transmitted through the ditch filling. The load may be said to "arch over" between the pipe and the sides of the ditch at about the extremities of the 90-degree sector, at least for all widths of ditches which are common in pipe sewer construction.*

It has been proven by experiment and by careful study of pipes in actual ditches that the width of the ditch at the level of the top 90-degree sector (see the dimension B in Fig.

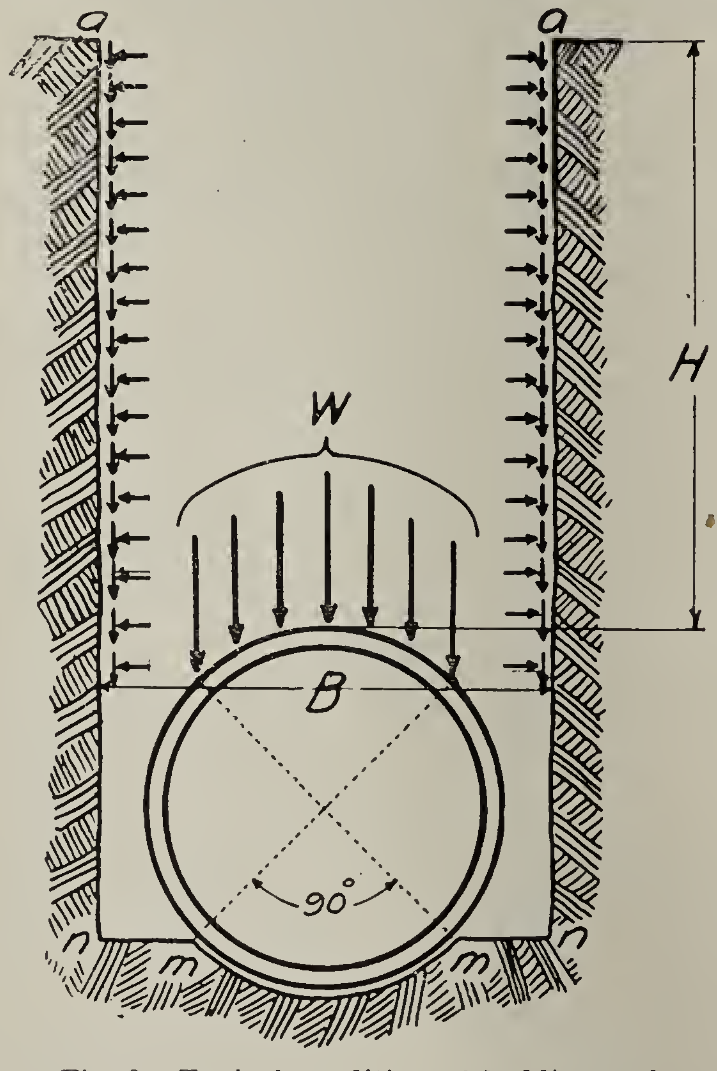


Fig. 2. Typical condition of bedding and loading of pipes in ditches.

2) is the width factor which affects the load on the pipe. The ditch may widen out indefinitely above this level without increasing the load on the pipe appreciably. All filling in such added width will be carried on the solid soil beneath, instead of on the pipe. This filling is shallower than the filling over the pipe and settles less, and hence frictional resistance develops along the same vertical lines as shown in Fig. 2, and thus will help carry part of the weight of the rest of the ditch filling, just as in the case of vertical sided ditches.

It has been proven by experiment and by careful study of pipe in actual ditches that it is the width B (see Fig. 2) of the ditch a little below the top of the pipe which determines the total load on the pipe, and not the diameter of the pipe itself. For example, in one experiment two pipes of different diameters were tried successively in the same ditch, and were found to be subjected to the same load. Sewer pipe have been found cracked in the wide portions and sound in the narrow portions of the same ditch. Pipe from the same factory have been found to crack in wide ditches and remain sound in narrow ditches in the same drainage districts. Hundreds of calculations of loads on pipes in ditches and comparison of the results of experiments and with the condition of the pipe in actual sewers and drains have shown the absolute reliability of a formula for loads on pipes in ditches which does not include the diameter of the pipe as a factor.†

The ditch filling above the top of the pipe settles relative to the sides of the ditch, thereby developing frictional resistances, as shown in Fig. 2, which carry part of the weight of the ditch filling. The total weight of the ditch filling at the time when the maximum load on the pipe occurs consists of two parts, one carried by the pipe and the other by the frictional resistances. At all other times than those of occurrence of maximum loads an additional part of the total weight is carried to the sides of the ditch by cohesion, thus lightening the load on the pipe. In the long time test at Ames, Iowa, the loads between maxima sometimes became as low as 65 per cent. of the maximum, but they averaged about 75 per cent. between maxima. Maximum loads may reoccur from time to time, with changes in the condition of ditch filling, especially as to degree of saturation.

We are concerned mainly with the probable maximum

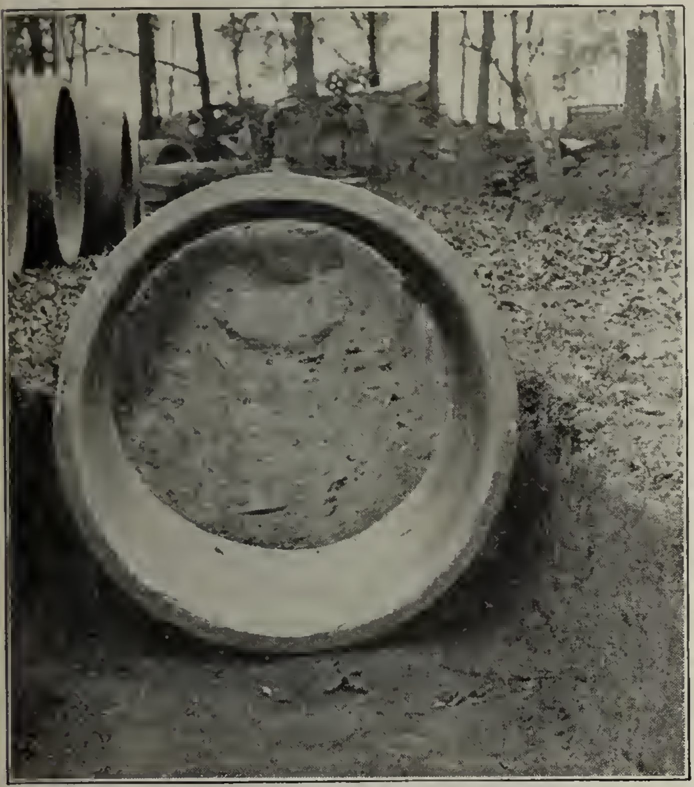


Fig. 6. View showing a field test at Ames, Iowa, of the supporting strength of a pipe in a flat-bottomed trench. Since the bottom of the ditch is not rounded to fit the under side of the pipe, the pressure af the pipe against the foundation is concentrated at the center, and the pipe is thereby materially weakened. This method of pipe-laying is "impermissible", but can be prevented only by a competent inspector constantly on the work.

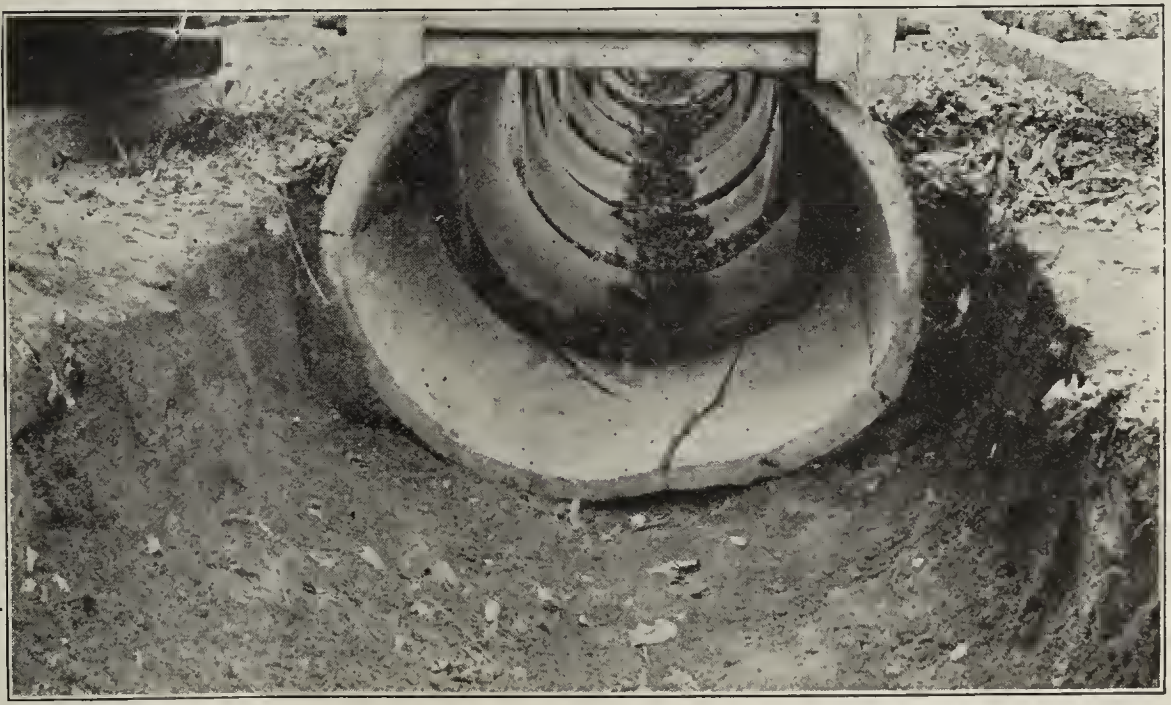


Fig. 7. View showing cracking of a pipe in a flat-bottomed ditch during a field test in the investigations at Ames, Iowa, of the supporting strengths of sewer pipe and drain tile in actual ditches with different pipe-laying methods. In the "impermissible" pipe-laying method used for the pipe shown in Fig. 6, the supporting strength is materially less than the "ordinary supporting strengths" developed with the "ordinary" pipe-laying methods.

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*In ditches which are extremely wide as compared with the diameter of the pipe, the ditch filling at the sides will carry an appreciable part of the load, but it is safer not to count on any such precarious additional support.

†Of course, the diameter of the pipe generally determines the approximate width of the ditch at a level a little below the top of the pipe, and in this way affects the load on the pipe.

loads in designing pipe sewers as to structural strength rather than the loads between maxima.

It is not difficult to develop a mathematical formula for maximum loads on pipes in ditches based on the conditions shown in Fig. 2. The details of the mathematical work will be found in Bulletin No. 31, of the Iowa Engineering Experiment Station, already referred to. The resulting formula is

$$W=CwB^2 \qquad (1)$$

where

W=load in ditch, in pounds per linear foot.

C=coefficient of loads on pipes in ditches (to be taken from Table I or Fig. 3, below).

w=weight of ditch filling material, in pounds per cubic foot.

B=breadth of ditch a little below top of pipe, in feet.

From formula (1), together with Table I or Fig. 3, a table of loads on pipes in ditches may readily be computed for the different conditions commonly encountered in pipe sewer construction. Table II has been prepared in this manner, and by its aid the probable maximum loads can be ascertained without calculation.

The loads first imposed by refilling a pipe sewer ditch are not as great as those indicated in Table II as "safe loads" for sand or for clay refilling under ordinary conditions.

Under favorable conditions individual stretches of sewer pipe may escape carrying the safe loads** in Table II (just as a bridge may escape carrying the specified maximum live load), but there is always strong probability of the occurrence of these loads, and the sewer pipe should always be strong enough to carry them without cracking, and, indeed, with a considerable margin of safety.

The maximum load on a sewer pipe from ditch filling usually occurs at the time of the first very thorough saturation of the material.

"Impermissible" Pipe Laying Methods.

"Impermissible" pipe laying methods are those in which the bottom of the ditch is not suitably rounded to fit the under side of the pipe, or in which hub holes are not properly dug, or in which the refilling material is not placed to fill all around the pipe, or in which other impermissible defects of similar general character occur. Impermissible pipe laying methods should never be tolerated. They weaken the supporting strength of sewer pipe and drain tile very seriously.

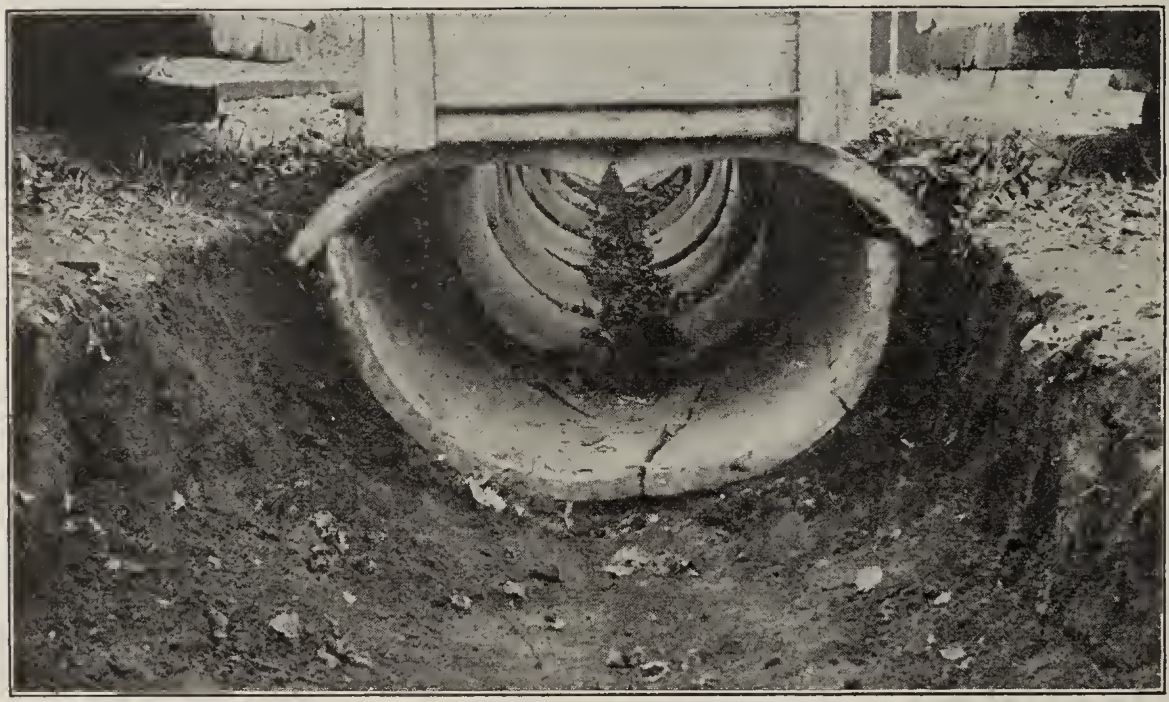

Fig. 8. View showing collapse of a pipe in a flat-bottomed ditch during a field test in the investigation at Ames, Iowa, of the supporting strengths of sewer pipe and drain tile in actual ditches with different pipe-laying methods. In the "impermissible" pipe-laying method used for the pipe shown in Figure 8, the ditch filling was not carefully refilled between the pipe and the sides of the ditch. Careful refilling and tamping between the sides of the pipe and the sides of the ditch helps much to prevent collapse of sewer pipe and drain tile even after they have cracked.

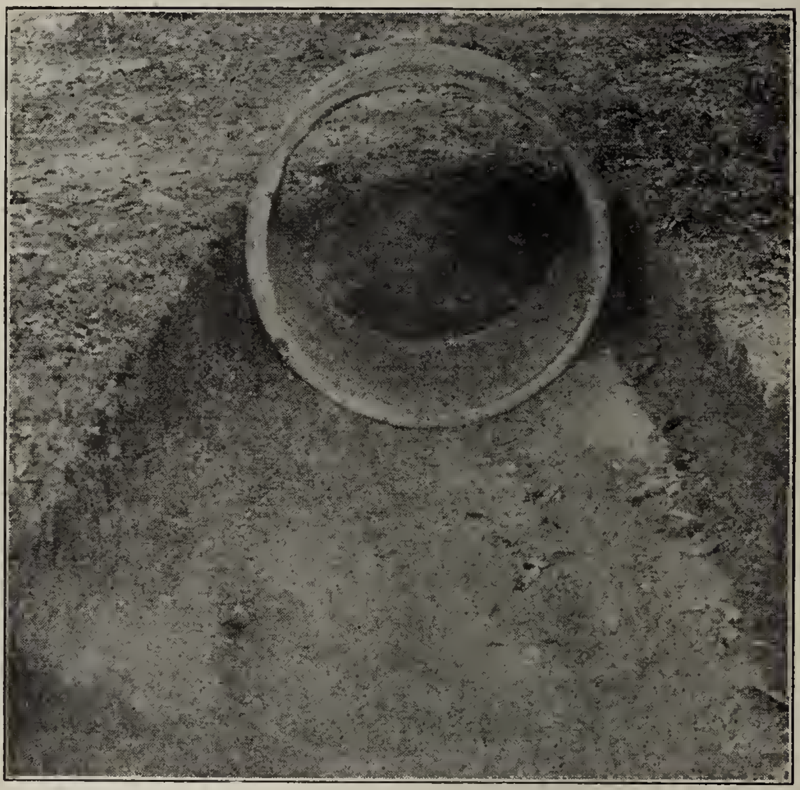

Fig. 9. View showing a field test at Ames, Iowa, of the supporting strength of a pipe in an actual, shallow ditch with the "ordinary" pipe-laying method. In the "ordinary" pipe-laying method the underside of the pipe is well bedded on soil for 60 to 90 degrees of the circumference, and the bottom of the ditch is rounded suitably for this purpose but the care taken in bedding the pipe is not so great as in "first class" pipe-laying, and only ordinary care is taken in refilling and tamping the ditch filling under the overhang of the pipe and between the sides of the pipe and the sides of the ditch. "Ordinary" pipe-laying is very common in large tile drain construction and in pipe sewer construction in villages and small cities. With "ordinary" pipe-laying, sewer pipe and drain tile develop, in actual ditches, "ordinary supporting strengths," which can be determined directly by laboratory tests with standard "sand" bearings, as described in Chapter IV, below. "Ordinary supporting strengths" are about 83 per cent. of the supporting strengths developed in actual ditches with "first class" pipe-laying.

"Ordinary" Pipe Laying Method.

The "ordinary" pipe laying method is that in which the under side of the pipe is carefully bedded on soil for 60 to 90 degrees of the circumference, suitably rounding the bottom of the ditch for this purpose and digging hub holes for all

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**Equivalent to ordinary maximum loads given in Table II.

pipe with the hubs, and in which the pipe is surrounded by soil placed with ordinary care.

"Ordinary" pipe laying is used extensively in constructing large tile drains under the direction of drainage engineers, and in constructing pipe sewers in villages and small cities. There are many variations in the wording of specifications for pipe laying methods which should be classed as "ordinary," but the effect of minor variations in the method is not great upon the supporting strength developed in the ditch.

The largest sewer pipe and drain tile show not more than 1/50-inch movement outwards of the extremities of their horizontal diameters under cracking loads (see Bulletin No. 31, pages 150 to 157, of the Iowa Engineering Experiment Station, Ames, Iowa), which is not enough to develop sufficient side resistance to affect the cracking load materially, even when the ditch filling is thoroughly tamped, as with "first-class" pipe laying. Nevertheless, all spaces around the pipe should be completely refilled with ditch filling material, for even untamped refilling between the sides of the pipe and the sides of the ditch is of great value in preventing the collapse of pipe sewers after they crack. Many miles of cracked pipe sewers and large tile drains are still rendering good service for this reason.

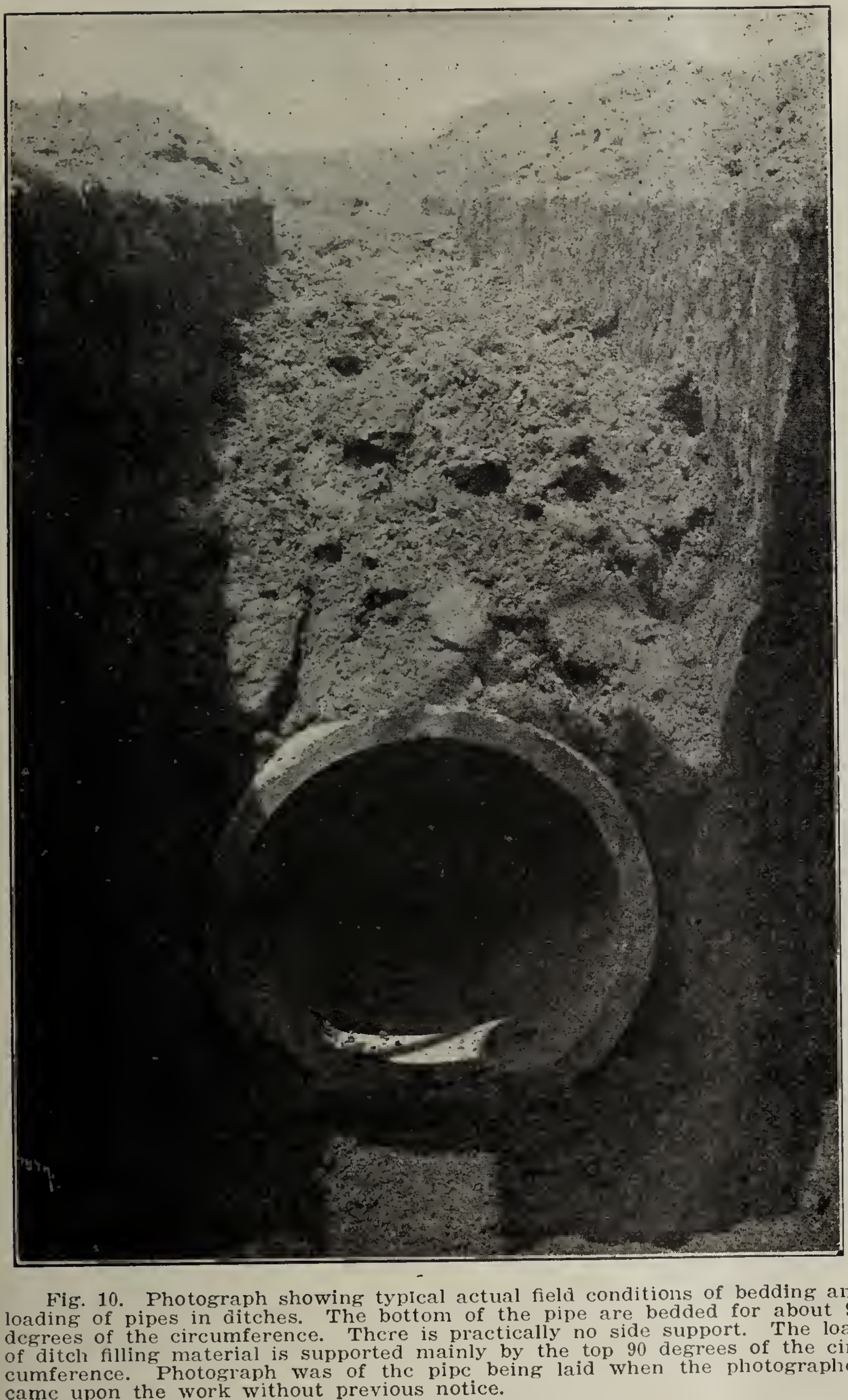


Fig. 10. Photograph showing typical actual field conditions of bedding and loading of pipes in ditches. The bottom of the pipe are bedded for about 90 degrees of the circumference. There is practically no side support. The load of ditch filling material is supported mainly by the top 90 degrees of the circumference. Photograph was of the pipe being laid when the photographer came upon the work without previous notice.

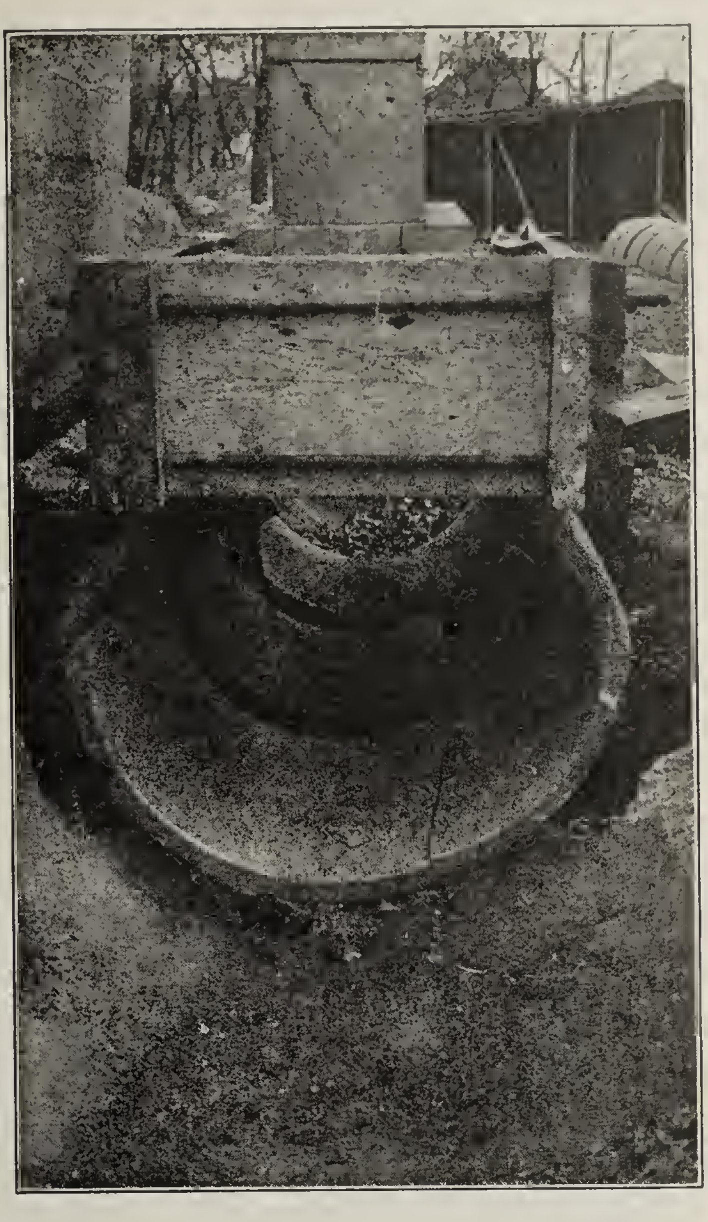


Fig. 11. View showing a field test at Ames, Iowa, of the supporting strength of a pipe in an actual shallow ditch with "first class" pipe-laying. In "first class" pipe-laying the underside of the pipe is very thoroughly bedded on soil for at least 90 degrees of the circumference and the entire pipe is surrounded by thoroughly compacted soil, all under the direction of a competent inspector constantly on the work. (See Fig. 12 for a field photographic view of "first class" pipe-laying on actual construction work.) With "first class" pipe-laying the compacted refilling between the sides of the pipe and the sides of the ditch help much to prevent collapse, even after the pipe is cracked as shown in Fig. 11. The supporting strengths developed in ditches with "first class" pipe laying are about 20 per cent. greater than the "ordinary supporting strengths" of the same pipe (which would be developed with "ordinary" pipe-laying.)

The loading conditions on sewer pipe and drain tile laid by the "ordinary" methods are closely reproduced by the standard "sand" bearings for laboratory tests of supporting strength (see Chapter IV, below). In fact, the standard "sand" bearings were devised after a careful study of ditch loading conditions, in an attempt to reproduce them so far as practicable. Hence, it is not surprising that the field tests at Ames, Iowa, described in Section 6, above, demonstrate conclusively (as they do) that:

The "ordinary supporting strength" of sewer pipe and drain tile is equal, with close approximation, to the cracking load in laboratory tests with the standard "sand" bearings described in Chapter IV below. The "ordinary supporting strength" is defined as the supporting strength to carry loads due to or transmitted through ditch filling which sewer pipe and drain tile will develop in actual ditches with the "ordinary" pipe laying method.

The "ordinary supporting strength" of sewer pipe and drain tile is a very important factor, on which all calculations of supporting strength with different pipe laying methods should be based, by the use of proper ratios, for the reason that in the great majority of cases of cracking of pipe in actual ditches the cracking occurs at loads just about equal to the "ordinary supporting strength" of the pipe which cracks. This has been demonstrated by very carefully and patiently collecting and studying the detailed data of all cases of cracking published or of which data could be collected during several years of correspondence and personal field investigation.

"First-Class" Pipe Laying Method.

The "first-class pipe laying method is that in which the under side of the pipe is very thoroughly bedded on soil for at least 90 degrees of the circumference (suitably rounding the bottom of the ditch for this purpose and digging hub holes for pipe with hubs) and the entire pipe is surrounded with thoroughly compacted soil, all under the direction of a competent inspector constantly on the work.

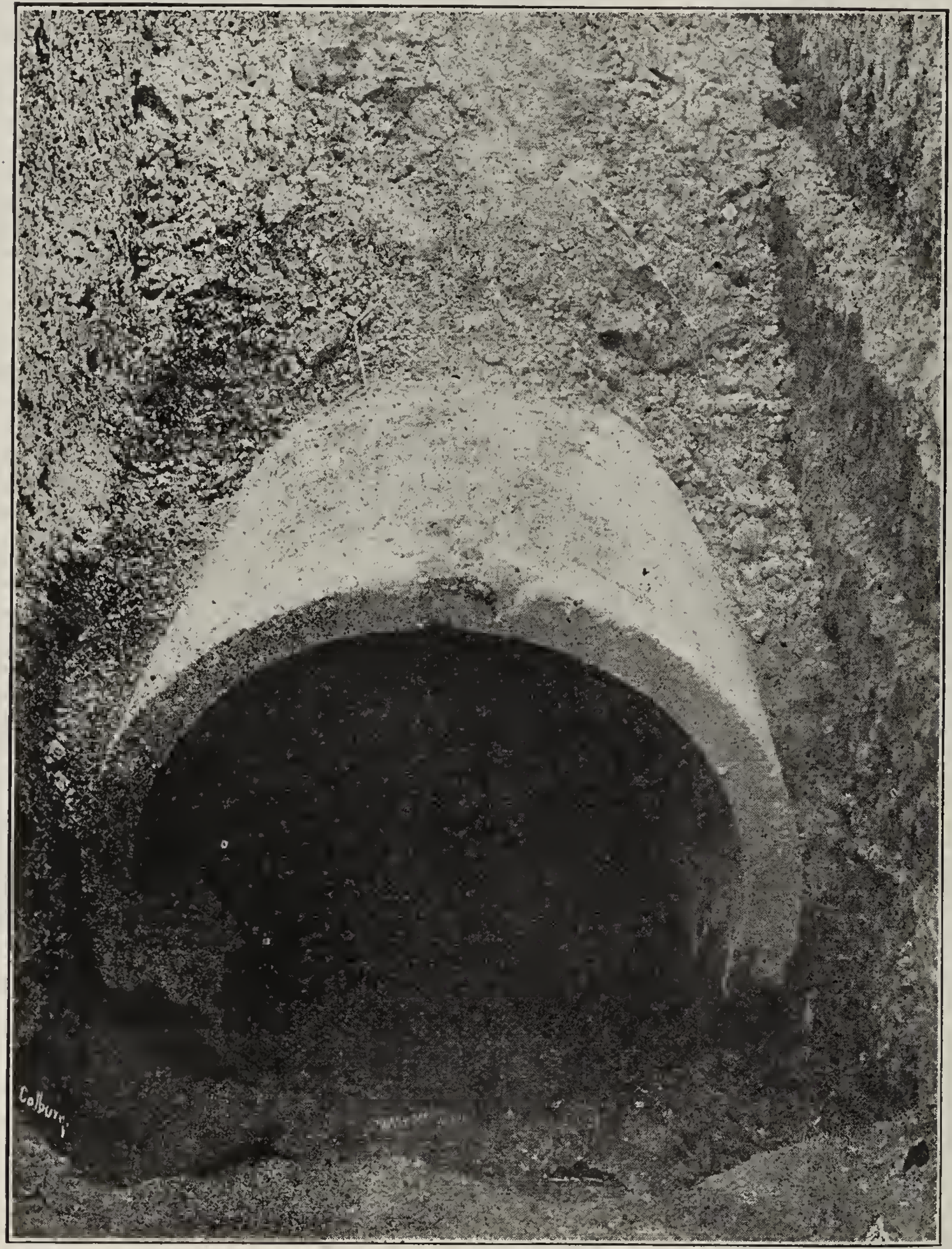


Fig. 12. Photograph Showing the very best possible bedding of pipes in ditches. The bottom of the ditch has been shaped to fit the 36-inch pipe and the bottom of the pipe bedded in a layer of granular material. The side filling has been carefully tamped around the pipe. In spite of this care in laying all the pipe cracked under about nine feet of fill.

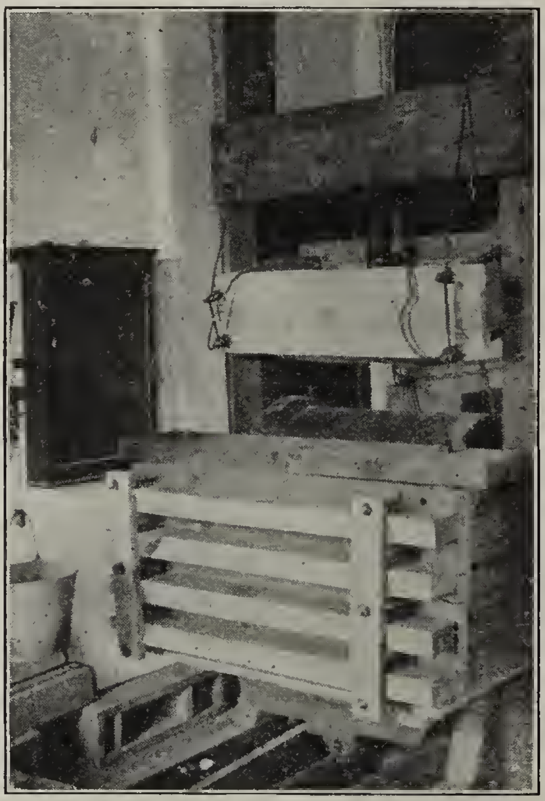


Fig. 13. View showing a laboratory test at Ames, Iowa, of the supporting strength developed by sewer pipe completely bedded on and surrounded by tamped gravel, as specified for the East Grand Avenue sewer at Des Moines, Iowa. The supporting strengths developed with this special pipe-laying method are at least 25 per cent. greater than the "ordinary supporting strengths" developed with "ordinary" pipe-laying.

The "first-class" pipe laying method is extensively used in pipe sewer construction in large cities, and generally in all important pipe sewer construction carried out under an adequate, well organized and thoroughly competent engineering force. There are many variations in the wording of the specifications by different engineers, but the corresponding variations in practice produce only minor effects on the actual supporting strength of the sewer pipe and drain tile in ditches.

The use of the "first-class" pipe laying method ought to be greatly extended beyond present practice.

The supporting strength to carry loads, due to or transmitted through ditch filling which sewer pipe and drain tile will develop in actual ditches with the "first-class" pipe laying method, may be set safely at, at least, 20 per cent. greater than the "ordinary supporting strength" of the same pipe. (For the definition of "ordinary supporting strength," see page 21, just above.)

Concrete-Cradle Pipe Laying Method.

The best engineers seem pretty well agreed that the use of concrete cradles in pipe laying ought to be greatly extended beyond present practice in the construction of all pipe sewers of 15 inches and larger diameter.

There is at present no generally accepted practice as to the detailed dimensions and other characteristics of concrete cradles for pipe sewers of different diameters, and only a very few tests have been made to ascertain definitely the actual effect of any particular design of concrete cradle, in increasing the actual supporting strength of the sewer pipe or drain tile in ditches. The designs of concrete cradles are made by rule of thumb, and vary with the whims of the designers, between wide extremes for the same service.

In the field tests at Ames, Iowa, of the supporting strengths of sewer pipe and drain tile in actual ditches (described in Section 6, above), a number of concrete cradles of different designs have been subjected to actual test, with general results as follows:

First—It is possible to design and build concrete cradles of reasonable cost which will increase the cracking strengths of sewer pipe and drain tile under loads, due to or transmitted through ditch filling 100 per cent. or more above their "ordinary supporting strengths." (For the definition of "ordinary supporting strengths," see page 21, just above.)

Second—Variations of the dimensions and other characteristics of concrete cradles (for the same diameter of pipe and other conditions) affect the increase of supporting strength greatly. The real effect of variations can be ascertained reliably only by actual tests to destruction.

Third—A large amount of experimental investigation of concrete cradles of different designs tested to destruction are necessary to determine the best designs and the real values of concrete cradles of particular designs.

Tests of Sewer Pipe Completely Bedded on and Surrounded by Tamped Gravel.

It has been suggested that the supporting strengths which sewer pipe and drain tile develop in actual ditches could be materially increased by bedding them on and completely surrounding them with tamped gravel.

Accordingly, this type of bedding was tested in an actual ditch at Ames, Iowa, in 1916. The test indicated that complete gravel bedding increases the supporting strength of sewer pipe to a value somewhat higher than that for "first-class" pipe laying, or say to at least 25 per cent. above the "ordinary supporting strength" of the same pipe. (For the definition of "ordinary support strength," see page 21, just above.)

Fig. 13 is a photographic view of a laboratory test of a special gravel bedding of this general character, designed to imitate the pipe laying specification requirements in the East Grand avenue sewer in Des Moines, Iowa, which the Iowa Engineering Experiment Station was engaged to investigate because it had cracked and collapsed under very severe conditions.

A MATTER OF MAN POWER.

The industrial problem today in this great country of ours is largely a matter of man power. Other factors enter and many different influences have a bearing, yet after all the dominant factor in the problem is man power. This is easy enough to understand once we analyze the situation thoughtfully. The census returns show approximately 40 million people in the United States over ten years old engaged in gainful occupation. Of this it is estimated that 10 million are required for the army and for war activities generally. This means in substance that a fourth of our entire industrial force is drawn upon to fill the ranks of the army and to man those industries engaged directly in supplying army and war needs. This leaves only three-fourths of the normal quota of man power available for other industries and at the same time many other lines of industry have unusual demands upon them through being indirectly affected by war conditions. Broadly speaking we are confronted by conditions which demand unusual activity and at the same time a fourth of the man power is drawn away from the usual occupations, and it is this which makes the great problem of the day one of man power. It means that bickering and strikes should not be tolerated, that all who are able to work must work, and that it is an occasion for employing all possible mechanical labor-saving devices and machines.

THE LABOR SITUATION.

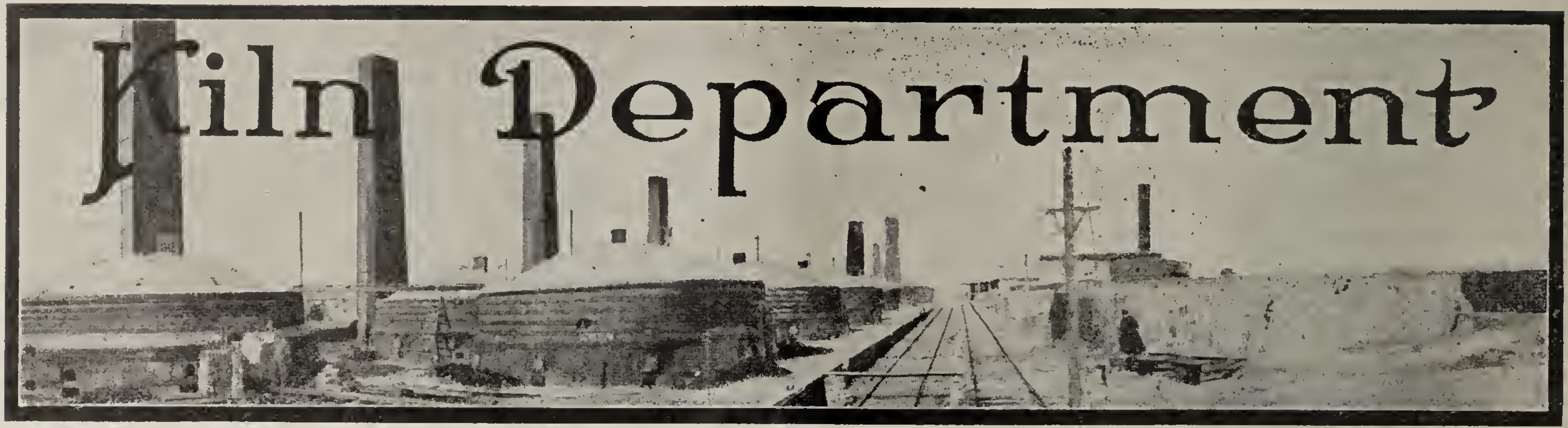
THE labor situation is not so bad as it has been or as it may appear from reading the complaints of shortage which have been coming largely from munition plants, shipyards and mines. The coal mines as a whole are now fairly well supplied. Also, many who turned to and helped build army plants are now getting back into their regular rounds. So there will perhaps be more men available for the building trades this season than was expected. For one thing, the call to the colors has taken men from all ranks — lawyers, clerks, doctors and professional men, as well as skilled workers and common laborers. Many of those from offices have had their places filled by girls, which helped out considerably. This is not only true of office work, but the girls and women have entered quite extensively into light factory work. To further help out all around, the older men, who have been taking things rather easy, are now getting more generally into harness. Then, finally, labor-saving devices are being brought more into use, both on the farm and in the factory. So, with proper co-ordination all around, we should be able to get through very nicely and do a fair share of building the coming season, as well as keep what are termed the essential industries moving at a satisfactory speed. All sorts of help costs more, and this must be taken into consideration. Also, there will be some shortage felt here and there, but from present indications there is enough help available in the main for us to make out with very well.

UNDERSTANDING.

One who reads the trade papers, magazines and the ponderous reviews of the country can hardly escape the impression that humanity is right now devoting a lot of time to an academic study of itself. Employers are trying to study the thoughts, aims, ambitions and needs of labor, while on the other hand the advanced thinkers in the laboring class are making an analytical study of employers so that they may understand them better—no matter what that understanding is to be used for, co-operation or for taking advantage. In the rounds a whole lot of good time is being wasted and unnecessary thought and study is being expended. There are many cases where if the boss and his men would take a week off and go fishing together they would come to understand each other a whole lot better than through this process of academic study. There is too much abstract theorizing and not enough getting acquainted in the industrial world today and it is time to about face and get together.

THE RETAIL TRADE.

This is one year in which special attention should be given to what is termed the retail trade, to pushing business in small incidental orders for brick and other clay products. The new chimney flue or fireplace may not seem worth wasting much time over, but in the aggregate these small orders will amount to a lot and they promise to save the situation this year. The shortage and high price of coal will very likely encourage a return to stoves and open fireplaces for local heating, instead of trying to keep the whole house warm, which makes an opening for developing an unusually large aggregate of trade in these items. There are many other opportunities among smaller items that are too often overlooked in the scramble for home building, and these offer the best field for salesmanship during the year. The present trade outlook points toward big depots, warehouses and factory buildings on the one hand, and toward a great lot of lesser orders and small jobs on the other. So while still promoting the home building idea let us pay special attention this year to what is termed the retail trade. The presenting of this promises better returns for the efforts expended than any other line.



WASTE HEAT FROM CONTINUOUS KILNS.

(By W. D. Richardson.)

SINCE THERE IS NOW an active and growing interest in continuous kilns as a means of saving fuel and labor, there is a demand for information upon the question of whether there is waste heat from such kilns that practically can be utilized in drying the brick or other clay products. This question was brought up in the last convention of the N. B. M. A., and has been briefly discussed at previous conventions; but time has not been given on such occasions for a satisfactory treatment of it, since there are many sides to it—a number of conditions that would modify a direct, positive answer.

The utilization of the heat from cooling periodic kilns for drying brick in tunnel dryers is now so common and so advantageous that naturally one who is proposing to change to the continuous kiln wants to know if that would necessitate a remodeling of his dryer or the providing of a separate source of heat for it. If one is building an entirely new plant, this consideration is not so serious, since it is then merely a problem of designing a dryer best adapted to all the conditions. There are also some clays that cannot be dried by a blast of hot air without too great a loss by cracked ware, and, of course, in such cases the waste heat dryer is out of the question. By "waste heat" dryer it is understood that we mean the usual form of dryer supplied with hot air exhausted from cooling kilns by a fan and blown into the tunnels. Where periodic kilns are used the heat stored up in the kiln walls and flues during a burn and in the burnt brick or other ware is properly waste heat, since, unless drawn from the kiln by a fan, it would pass into the atmosphere and be lost. Waste heat, however, is not "free" heat, when it is utilized, since it costs something to apply it to the drying of brick or other clay products.

No definite, reliable figures have been published that we know of as to the cost per thousand brick of drying by waste heat in the usual manner. There is first to be reckoned in the cost the interest on the investment in the large and long underground ducts, the large fan, including the tempering chamber and fan house and the engine or motor and belt required to operate the fan. Then there is the cost of repairs and the depreciation on this equipment, and lastly the constant expense of power for operation.

The cost can be ascertained easily in any case when the conditions are known. For instance, let us assume, in the case of a waste heat dryer drying 40,000 brick a day, that the investment in ducts and complete fan equipment and housing is $10,000; that the power consumed every twenty-four hours is 360 k.w., and the cost per k.w. is 1½ cents. We would have the following figures as the cost of drying by waste heat:

Interest on the investment at 6 per cent per working day, allowing 300 days of operation per year	$2.00
Cost of power per day	5.40
Repairs and depreciation, 5 per cent	1.60
Total cost per day of operation	$9.00
Total cost per thousand brick	.25

In considering these figures it should be borne in mind that the cost of drying brick by any method is generally underestimated. The purpose of this example is not to give exact figures of actual cost, but to illustrate the calculations to be made in any given case.

Now, with a continuous kiln one of the most important items in the saving of fuel is that the air for combustion comes to the fuel very hot, since it has passed through the hot chambers of brick back of the fire, the last chamber through which it passed being red hot. In this manner there is not only saved the heat expended in periodic kilns in raising the temperature of cold air to that of the kiln under fire, but also, in consequence of this, a higher temperature can be attained with any given fuel. That no better use can be made of the heat from the cooling chambers than in heating air for combustion and in water-smoking the freshly set chambers of brick is the opinion of the ablest ceramic engineers in America and Europe. Accepting this without discussion, the question then resolves itself into whether there is more heat in these cooling chambers than is required for these purposes, or whether it may not be practical to remove a portion of this heat to the dryer, even though it takes some additional time and fuel to do the burning.

This makes the question a rather complicated one, since for an intelligent consideration of it in any special case, one should know the kind of continuous kiln that is being calculated upon. For instance, one of the most vigorously promoted continuous kilns on the market in this country is not what is generally understood in Europe as a pure continuous kiln, since it is only partly regenerative, one-half to two-thirds of the fuel being fired into temporary furnaces built up in the doorways, for the burning of which much of the air has not been preheated. Moreover, as usually constructed, this kiln does not permit of the use of the heat of the cooling chambers for water-smoking. In such kilns there is undoubtedly waste heat for use in drying brick in a tunnel dryer. It is not the purpose of this design of continuous kiln to attain the utmost economy in burning, but since there is a material saving of fuel over the periodic kiln, it is claimed that it is better to burn a little extra fuel in the continuous kiln than to provide a special heating plant for the dryer. Also, with the brick usually burned in such kilns more or less discoloration from sulphurous gases, due to watersmoking direct with the combustions gases, is not considered a serious matter. So it may be accepted, we think, that in this type of kiln, drying brick in a tunnel dryer with the heat of the cooling chambers, is practical.

Of course, in any continuous kiln there is waste heat from the chamber being emptied and from the next chamber ahead of it, that can be utilized in drying brick in a rack dryer above the kiln, as is frequently seen in Europe, but the temperature of this air is too low to be practically employed in drying brick in a tunnel dryer at a distance from the kiln. There is also some waste heat in the gases passing from kiln to stack or fan. Where stack is used this heat in the flue gases is required to heat up the stack so as to give sufficient draft, but where artificial draft is employed these hot gases can be drawn through a recuperator, something after the manner of the Green Economizer for boilers. A dryer of this type is in use in Germany.

There is left now for our consideration the one question of whether the fully regenerative continuous kiln, in which all of the fuel is fired through openings in the top, or in which oil or gaseous fuel is used, has any waste heat practically available for drying brick in a tunnel dryer remote from the kiln. In the first place it may be stated that all high grade wares, and even common building brick, when clean oxidized colors are desired, should be watersmoked with the heat of the cooling chambers. This watersmoking reduces the heat available for preheating air for combustion so that, unless additional fuel is fired in the kiln, or the wares to be burned do not require high heat, we do not consider it practical to attempt to take away heat from kiln to dryer. Mind you, we say "practical," we do not say it is impossible, but from considerations of economy and efficiency, a better and more practical means of drying can be designed.

The most puzzling problem that the ceramic engineer has to handle is in many cases to increase the economy and efficiency of old plants without spending too much money in improvements. The most interesting and satisfactory problems that come to him are in connection with the building of an entirely new plant. In carrying out such a proposition the competent engineer can introduce many economies, produce a higher grade product at a minimum cost, and do everything a little better than it has ever been done before.

Let us keep everlastingly before us the fact that for brick building to grow as it should we must train more youngsters in the art of laying brick. There are practically a million carpenters in the country, and when we get an army of a million bricklayers we will be in a position to push brick building properly.

POSSIBLE MODIFICATION OF FUEL CURTAILMENT.

As THE READERS of The Clay-Worker were advised in our previous issue, an order curtailing the fuel supply was issued by the U. S. Fuel Administrator April 13. Appreciating the fact that in some localities conditions may justify or require the production of a larger percent of brick than contemplated in the order of curtailment, the Fuel Administrator has prepared a blank application for a permit for additional fuel allotment. As is clearly set forth in the following letter from Director Noyes, a careful perusal of which, together with the Order of Curtailment given in full in the April Clay-Worker, is essential, those desiring an increased allowance may on application obtain same, if in the opinion of the Fuel Administration circumstances justify the increased output.

UNITED STATES FUEL ADMINISTRATION,
WASHINGTON, D. C.

May 7, 1918.

Mr. Theo. A. Randall,
Secretary N. B. M. A.,
Indianapolis, Ind.

Dear Sir:

Your letter of May 4th received.

We are enclosing herewith copies of application forms. These forms you will note are to be made out by the Local Fuel Administrator, forwarded by him to the State Administrator for approval and thence to us for decision. These forms are in the hands of the Local Fuel Representatives, and there will be no necessity for any general distribution to the trade.

Very truly yours,

UNITED STATES FUEL ADMINSTRATION.
P. B. NOYES.
Director of Conservation.

APPLICATION FOR PERMIT TO RECEIVE ADDITIONAL FUEL FOR THE MANUFACTURE OF BUILDING MATERIAL IN EXCESS OF THE AMOUNT STIPULATED IN CURTAILMENT ORDER OF APRIL 13, 1918.

Information called for in this application must be furnished by the individual or company desiring said permit and presented to local fuel representative who must certify both as to the truth of the statements, and to the supply of fuel on hand.

This certified application must then be forwarded to the State Fuel Administrator for approval and by him to the U. S. Fuel Administration at Washington.

1. Individual firm or corporation................................

2. Address ....

3. Commodity ....

4. Purpose for which material in excess of present production is asked. ....

....

5. Amount of commodity required for special purpose stated.

....

6. Maximum amount producer can deliver under curtailment order.

....

7. Additional fuel and kind necessary to complete quantity of material needed..

I certify that the supply of fuel in this locality is so plentiful that the additional amount asked for by the above concern will not affect the necessary allotments to other important consumers for the following reasons:

....

....

and I certify further that the material is to be used for work of public importance.

Local Fuel Administrator.

(Signed) ....

APPROVED:

....

State Fuel Administrator.

THE TRACTOR ON THE FARM.

The tractor is practically saving the day for the farmers of the country. It is contributing more than any other one factor to relieving the shortage in labor and in horses and mules. So it will naturally make practical a larger yield of foodstuff. It will do more than that eventually, it will lead to more tile drainage, more incentive toward and pride in country home building, landscape architecture. In the final analysis it will perhaps be found that as the automobile in the hands of the farmer contributed largely to the good roads movement, so will the farm tractors prove an important entering wedge to the use of more clay products on the farm and to a better and more permanent order of farm building. forms are in the hands of the Local Fuel Representative, and

BRICK---THE BUILDING MATERIAL OF THE AGES.*

By A. F. ROSENHEIM.†

QUOTING FROM Sir Charles Leyell's "Antiquity of Man."—"Granite disintegrates and crumbles into particles of mica, quartz and feldspar; marble soon moulders into dust of carbonate of lime, but hard, well-burnt clay endures forever in the ancient landmarks of mankind."

The complete story of brick has never been told. Its history is the history of architecture. The purpose of this paper is to bring home briefly to you the fact that brick, the building material which has come down through the centuries, is still the leading building material in America. Other materials have, in various countries and at various periods, crept in for a time, but brick has always serenely gone on its way and after each digression has come back with more prestige than ever before.

It is a noteworthy fact that every nation that has not had stone easily available for its building construction has developed some kind of durable brick, specimens of which are extant today. It would be interesting to know whether or not the ancient nations, which so far as we are aware had no intercourse each independently developed its building brick.

Brick was known in the very earliest Biblical times. It was by building the "Tower of Babel" of brick that the "Babylonians" hoped to span the space between earth and heaven. The Babylonians as early as 3000 B. C. built structures of brick—brick which is still sound. The modern town of "Hillar," with a population of 8,000, is today almost entirely built of brick taken from the buried palace of Nebuchadnezzar. Every brick manufactured in the time of that bearded old tyrant was stamped with his name. That, so far as we know, was the first use of a trade mark. Many of the brick made in those days had enameled or glazed surfaces which have retained their color to the present time.

The children of "Israel" were required to make brick for "Pharaoh" during their bondage in Egypt, and it was the decree which required them to furnish their own straw in the making of these brick that was directly responsible for the "Exodus." But with the Egyptians, as later with the Greeks, brick was a supplementary material. Their proximity to stone and the cheapness of their "slave" labor naturally made stone the dominant building material in these countries, particularly since they were ignorant of the fact that brick was the more durable material.

It remained for the Romans, the greatest engineers and builders of ancient times, however, to realize fully the possibilities of brick and to extend its uses to every kind of structure. They were the first to use burnt brick extensively. They were also the first to discover many principles of construction which are used even down to the present day. With the expansion of the "Roman Empire," brick penetrated every corner of the European continent and found its way across the channel to the British Isles.

Meantime, the Chinese developed brick to such perfection that it has stood in the "Great Wall" for centuries. This wall, which was ten years in building, was finished about 211 B. C., and such was the character of its construction that it is still sound.

The Saracens also developed a brick of their own and gave Europe lasting examples of their art in the "Alhambra" and other buildings they left behind them following their meteoric sweep across southwestern Europe.

In the "Middle Ages" brick was the most popular building material in Holland, the Netherlands, Italy and parts of Spain. Each country developed its own practice, leading to a great diversity in brick architecture. In England during this period, brick was largely covered with "compos," a practice abandoned in the beginning of the fifteenth century, when England began to perfect its brick architecture and give to the world buildings which set the standard until the present generation of American architects began to realize the possibilities of brick.

At the present time brick is the predominant building material in every civilized country. And the United States, whose building policy has never been worthy of its advance in the industrial field, is finally taking its place at the head of brick development.

Building in America.

It is a strange fact that the United States, in which material progress has gone to lengths never before reached in the history of the world, should, until recently, have been the least progressive in the matter of building. In the early Colonial days economic conditions were such that it was only natural for all Pilgrims to construct practically all of their buildings of wood. But why we should persist in building of the most inflammable and least stable building material is one of the riddles of history.

The conditions which made wood the most economical building material have long since passed. When the forefathers landed there was a generous supply of timber on every hand. All that was necessary to make a house secure from the severe climate of New England was to cut down trees and build thick walls which could resist every kind of weather. There was an additional reason for this form of building, for there were no brickmakers among the earliest colonists. Not until 1634 was the first brick house built on the American continent. That was built in the town of Medford, Mass., by Governor Craddock of Massachusetts Bay Colony of brick brought from Europe, and has stood as a monument to the durability of brick for almost three centuries.

So far as we know, the first brick in America was made in the New Haven Colony in 1650, but very little was manuufactured until after the revolution.

But while brick was not extensively used, the most sacred monuments which we have of those early historical days were built of brick—the "Old State House" and "Faneuil Hall" in Boston, "Independence Hall" in Philadelphia, the old home of "William Penn" and the "Betsy Ross House" in which the first American flag was made. It has been possible to hand these down as an inspiration from generation to generation simply because they were built of brick.

Until comparatively recent times, wood in the ordinary building was the only material which was given any consideration. Only the pretentious houses of the rich and important commercial buildings were built of any other material, and in this class of buildings brick has always been the predominant material. Wood is, however, no longer cheap. Practically all the sources of timber within the reach of the great centers of population have been exhausted. Lumber must now be hauled hundreds and, in many cases, thousands of miles, to market. Both the scarcity of the material and the high cost of transportation have taken from the frame construction the only virtue it ever possessed—cheapness.

Since this condition has come about, the inventive American mind has been working overtime trying to find some substitute for wood in economical building. In our own day builders have spent much time and money in trying to make "stucco and cement" construction a success, but so far they have not been rewarded with any achievement worthy of note. This form of construction was borrowed from European countries, where the coat of stucco or cement has always been put on solid walls of brick or stone as a background, and where climatic conditions differ greatly from most parts of the United States. Some attention has also been given to concrete and while this is adapted to some forms of building, it has not yet been applied successfully to small buildings. The best that can be said of all these makeshifts is that they are experiments, which have not yet proved themselves.

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*Paper read before the Southern California Chapter of the American Institute of Architects in Los Angeles, November 13, 1917.

†Fellow of the American Institute of Architects, former president of the Southern California Chapter of the American Institute of Architects, and former member of the board of directors of the American Institute of Architects.

A very good illustration of this fact is a recent residence erected by a man whose energy is devoted to persuading people to build "stucco" houses. This man erected a fine house on one of the best known residence streets in a large western city, and presumably with the most approved methods of this form of construction. Yet before he moved into the house, large rifts and cracks had marred its exterior.

If one conversant with the best methods of building stucco houses meets with such failure, what hope is there for the owner who is inexperienced and who must depend entirely on others in the building of his house?

Through all these changes and fads in building construction the best houses have continued to be built of brick, for the simple and sufficient reason that for beauty and permanency no other material has ever approached it; and now, in our own time, in addition to these advantages, other materials have so nearly approached brick in cost that brick is also the most economical building material.

Advantages in Building With Brick.

I have already suggested that no building material possesses the advantages of brick, and without going too deeply into the matter, I wish to bring a few of the more important ones to your attention.

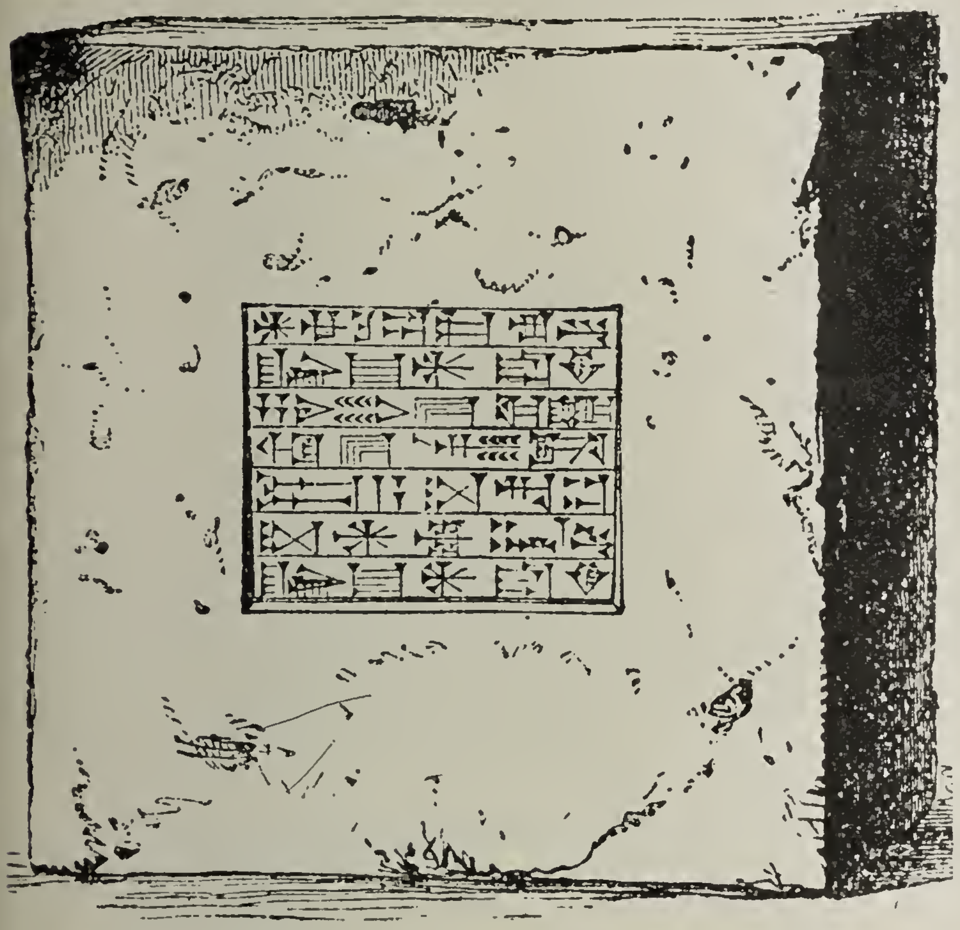
There are so many examples of the beauty of brick construction in almost every locality that merely to suggest this advantage is sufficient. The best evidence that brick is the most durable of all building materials is the very history of brick itself. But there are other considerations as important as these.

After most exhaustive investigations, insurance experts, architects, Chambers of Commerce and the United States Geological Survey have come to the conclusion that no building material yet discovered even approaches brick in fire-resistive qualities. Nothing has more forcibly brought this fact to the attention of the American public than the "San Francisco" and "Baltimore" fires. The only walls that came through these so nearly maintains itself as a brick house. Every other form of construction requires constant attention. The one item of painting soon makes up for the difference in first cost between frame and brick construction. The annual cost of upkeep and repairs on an ordinary frame house costing $10,000 is $250, or an annual tax of 2½ per cent. on the original cost of the building, according to statistics gathered by the Committee on Fire Prevention of the Boston Chamber of Commerce. The percentage practically holds, no matter what the size or cost of the building.

Aside from this consideration of the increased cost of maintenance in other forms of construction, a brick house is the only house whose value does not depreciate from the very day it is built. There are many instances in every community where brick houses, after years of service, have been sold for more than their original cost. This fact alone makes a brick house a much more stable form of investment than a frame house, for the selling value of the house is the only tangible index of its value.

Another saving which comes with a brick house is in the matter of heating. A brick house not only requires a smaller heating plant than a frame house of the same size, but also saves from 20 to 25 per cent. of fuel. Furthermore, all the inconvenience and cost of frozen plumbing are eliminated in a brick house. Without entering into details, everyone knows that there is no cooler house in the summer than a well-constructed brick house.

These advantages have long been conceded to brick, but



BABYLON.

IN Babylon, amidst a network of canals and traces of ancient agricultural skill, on the banks of the Euphrates river, huge heaps of earth-covered ruins are found everywhere. The Temple of Belus, the Hanging Gardens, the Tower of Babel, the palaces and the tombs, are hidden in monstrous mounds that cast their shadows over the solitary plain. No one would suppose that here Cyrus reigned and Alexander feasted, that the most populous of earthly cities once occupied the desolate scene before him. Cities have been built from the ruins of Babylon, and generations have pilfered its remains, yet modern discoverers still find it full of objects of interest and value. Even the Babylonian brick, pictured herewith, is a work of art, and the Babylonian lion discovered in one of the mounds, standing over a man, is by some supposed to be commemorative of Daniel's deliverance.

through force of habit persons look upon brick as an expensive form of construction. People who must necessarily economize in building have come to regard brick as beyond their means. Yet it is a fact that the more one is forced to economize, the less one can afford not to build of brick.

Comparative cost of building.

I do not maintain that brick construction is cheaper in first cost than frame or stucco. What I do claim for it is (and I have ample ground upon which to base this claim), that brick is the most economical form of construction. The difference in first cost is so slight that it is only a matter of a few years before the saving in the expense of maintenance, in fuel, fire insurance, etc., more than makes up this difference.

This matter of the comparative cost between brick and frame has been given a great deal of consideration in the last few years by committees on fire prevention, which have been appointed by civic bodies in many cities. While the primary object of these investigations has been to find some remedy for the great annual loss by fire in American cities, almost all of these committees have taken up the "relative cost" and maintenance of various forms of construction to show that brick buildings, which are most fire-resistive, are also the most economical.

The relative cost of building materials very naturally varies greatly in different localities, due to proximity to one or another from of construction material. It has been possible, however, from all these reports, to arrive at an average cost, from which the cost in different sections will not vary greatly.

The greatest difference is between all frame with clapboard exterior and a 13-inch solid brick wall with exterior facing of a high-grade front brick. This difference, however, is only 10.7 per cent. The difference between a clapboard house and a brick veneer on frame studding is 3.3 per cent. It is also interesting to note the difference between brick and stucco. There the solid 13-inch brick wall is only 5.8 per cent. higher than "stucco or hollow tile."

It is always well to bear in mind, in considering the relative cost of brick and other forms of construction, that the difference in cost is entirely the difference in cost of the outer walls of the building. The interior construction of the building, which is after all the largest item in the cost, is practically the same in all kinds of buildings.

A POOR UNFORTUNATE.

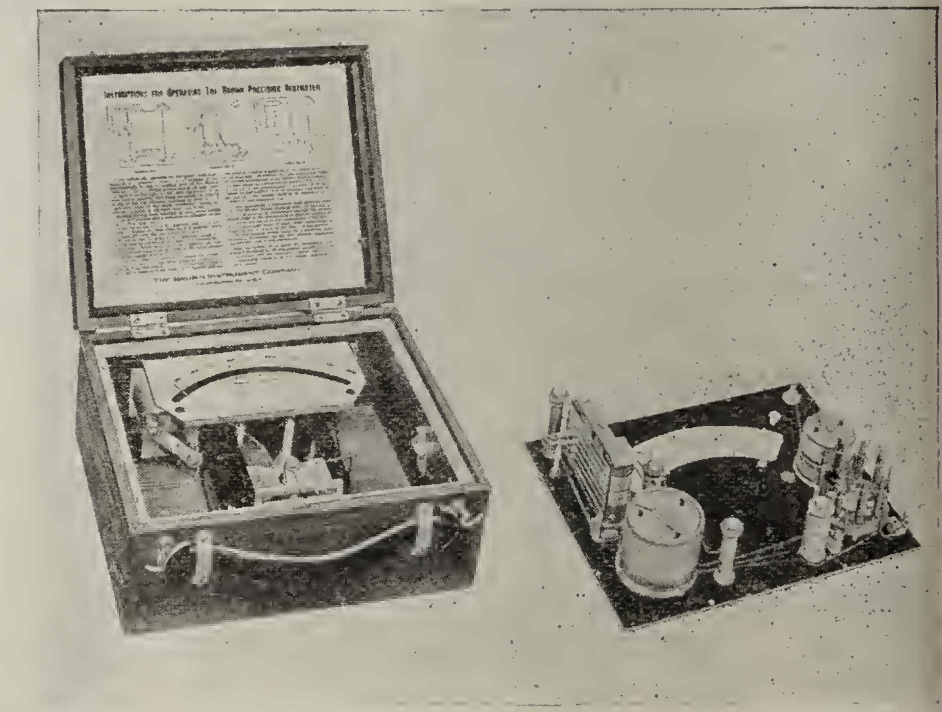
His hoss went dead, an' his mule went lame,
He lost six cows in a poker game;
A harricane come on a summer's day
An' carried the house whar he lived away,
Then a earthquake come when that wuz gone
An' swallered the land that the house stood on!
'An the tax collector, he come roun'
An' charged him up for the hole in the groun'
An' the city marshal he come in view
An' said he wanted his street tax, too!
Did he moan an' sigh? Did he set an' cry
An' cuss the harricane sweepin' by?
Did he grieve that his old friends failed to call
When the earthquake come and swallered all?
Never a word o' blame he said
With all them troubles on top his head!
Not him! He climbed on top o' the hill
Whar stan'in room wuz left him still.
An' barin' his head, here's what he said:
"I reckon it's time to get up an' git.
But, Lord, I hain't had the measles yit!"

—From Julian Street's "American Adventures."

THE AUTOMATIC CONTROL AND MEASUREMENT OF HIGH TEMPERATURES.[*]

PROBABLY no employe has caused the average works manager to have so many sleepless nights as does the furnace man, on whose shoulders rests the responsibility for the accurate heat treatment of the steel and the uniformity of the product. This is not only true of a steel plant, but is also equally true in the chemical industry, where the temperature of numerous processes must be accurately controlled; in the glass industry, where the melting of the glass and its annealing must be carried on within very narrow limits of temperature; in the brick industry, where the kiln firing is of the utmost importance, and I might continue the list throughout the whole industrial field.

The old furnace man, through years of practice, will endeavor to gauge the temperature of the furnace with his eye. Providing he has not been up all the previous night, and his eye is clear, he will probably judge the temperature fairly accurately. If he is of a reasonably kindly disposition, he may permit the manager to install pyrometers to guide him in controlling the temperature, and he may even in time use the pyrometers and rely on them.


The Brown Precision Heat Meter (Interior).

But we can pardon the works manager or director for thinking—suppose John dies, gets sick or quits his job, how am I to handle the output of these furnaces? He would like to have an understudy for the old furnace man, but the latter does not like the idea. So he wonders why some one does not develop a device to automatically control the temperature of the furnaces, so he can cease worrying about them.

This is one reason why a great amount of study has been given, not only to perfection of pyrometers, but also to the automatic control of temperature. It has, however, been only recently that real results have been accomplished in automatic temperature control.

First of all, it was necessary to perfect the temperature measuring instruments, so they could be relied upon to uniformly indicate the actual furnace temperature. It was then necessary to apply to the pyrometers attachments to throw the switches on the elecric furnaces, or open or close the valves on gas or oil furnaces.

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[*] Paper by Richard P. Brown, of the Brown Instrument Co., Philadelphia, Pa., read before the Faraday Society of London,

My experience in the United States has shown that for industrial service, an instrument actuated by the expansion of nitrogen gas is the most satisfactory for temperature measurements up to 800 deg. F. or 435 deg. C. The gas expansion instrument consists of a bulb of copper, which is inserted in the heat, and this bulb is connected by capillary tubing to an indicating or recording gauge containing a helical expansive spring.

The expansion of the gas in the bulb exerts a pressure in the capillary tubing, which is conveyed to the spring in the instrument, and the pointer attached directly to this spring moves across the scale or chart.

It is essential in this instrument that the capacity of the bulb be some fifty times as great as the capacity of the capillary tubing and spring. This is essential to reduce to a minimum errors due to atmospheric changes in temperature along the capillary tubing or at the instrument. In consequence this instrument is not desirable for use where the gauge must be placed more than 100 feet from the bulb.

INSTRUCTIONS FOR OPERATING THE BROWN PRECISION HEATMETER
THE BROWN INSTRUMENT COMPANY

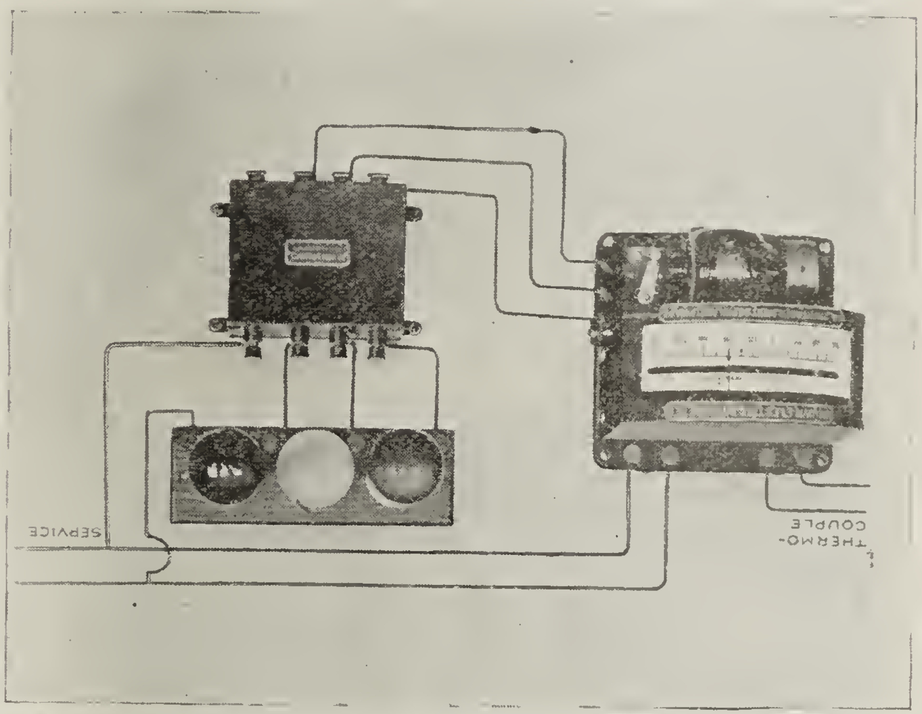
The Brown Precision Heat Meter.

For measuring the voltage produced by a thermo-couple, instrument must be placed at a considerable distance and for temperatures above the range of the gas expansion instrument, the thermo-electric pyrometer has been almost universally adopted in the United States. A thermo-couple of base metals, usually formed of one wire of nickel 90 per cent., chronium 10 per cent. and the other wire of 98 per cent. nickel and 2 per cent. aluminum, is preferred for temperatures to 1800 deg. F. or 1800 deg. C. For temperatures above this, and as high as 2800 deg. F. or 1500 deg. C., thermo-electric pyrometers, using a platinum rhodium thermo-couple, are the most satisfactory. For higher temperatures still, a radiation type of pyrometer is available, consisting of a thermo-couple in the focus of a reflector at the rear end of the tube, which is pointed at the door or opening of the furnace.

For measuring the voltage produced by a thermo-couple, whether of base metal, platinum rhodium, or the radiation type, high resistance milli-voltmeters are available. Such milli-voltmeters are produced by us in the United States of some 1000 ohms or more. This remarkably high resistance is naturally desirable to practically eliminate the errors due to changes in the resistance of the line or wiring connecting the thermo-couples and the instrument, and also to nullify the effects of any changes in the resistance of the thermo-couples, due to heating.

Changes in resistance may be due to actual changes in length or changes in atmospheric temperature, which in turn affect the resistance of the line or wiring. We have been able to secure this exceedingly high resistance by reducing the weight of the moving element to a minimum, and I have a sample of this moving element for exhibition.

The total weight of the moving element in our high resistance pyrometer, including pointer and springs, is 526 M. G. This extreme lightness is secured by the use of an aluminum alloy wire, which we have succeeded in enameling. The enamel coating is much thinner than the silk insulation formerly used, and more turns can be secured on a coil of a given width. Likewise, by the use of the aluminum wire, the weight has been reduced 66 2-3 per cent., as compared with copper wire which was formerly used for these moving elements. The aluminum wire is .003 in. in diameter, and drawing this wire has been quite a mechanical problem.



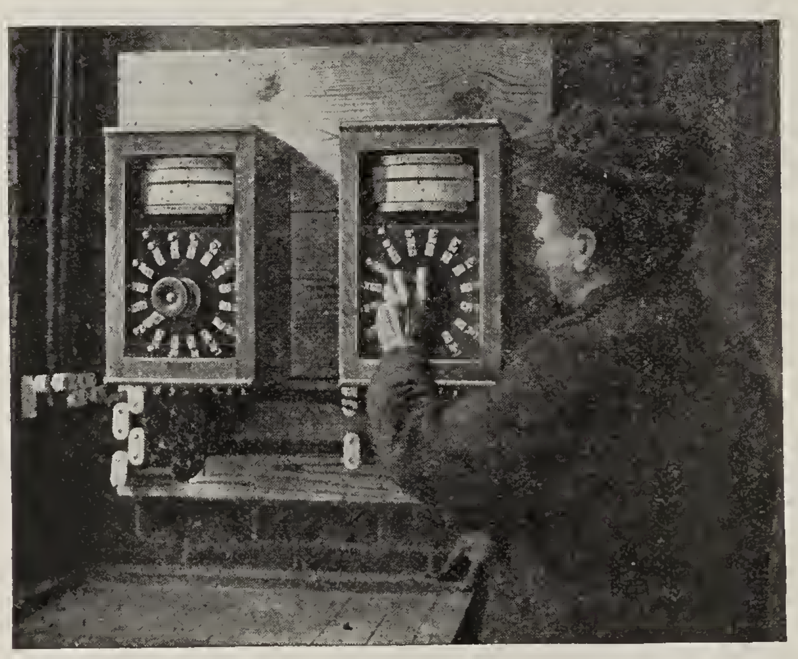
The Brown Automatic Signal Lighting Pyrometer.

The pointer tubing in this moving element is of aluminum, with an inside diameter of .008 in. and an outside diameter of .012 in., or a total thickness for the wall of the tubing of .002 in. Even this weight for the pointer tubing could probably be reduced by the use of magnesium instead of aluminum, but to date we have been unable to satisfactorily draw magnesium.

I only cite these points regarding the construction of our present day high resistance pyrometer milli-voltmeter to show what development work can produce. Instruments of this type made by Siemens & Halske, of Germany, were never developed to this extent, at least prior to the outbreak of the war, and their moving element was several times as heavy as the sample I have here, and in consequence the resistance of their pivoted meter was several times less. Incidentally, I think we have about reached the limit of development work along this particular line.

It will be understood that the same electrical system such as I have described can be used to either indicate the temperature, or, combined with the proper apparatus, to record the temperature constantly on a recording sheet. There are both portable and wall type indicating pyrometers, and recording pyrometers are produced to make a record on a circular chart 8 in. in diameter, or to make a continuous record of the temperature on a roll of paper lasting two months or more. By the introduction of suitable switching mechanism, a record of the temperature of quite a number of thermo-couples can be made on the same record sheet. These temprature records are distinguished by using different colors for each record line, by using numbers corresponding to each thermo-couple, or changing the form of line produced on the chart for identification.

Brown Pyrometers Are Used on Metropolitan Brick Co.'s Plant, Canton, O., for Controlling Kiln Temperatures.



Two Brown Recording Pyrometers for Recording the Temperature of Kilns.

For even greater precision in temperature measurements than is secured with the high resistance milli-voltmeter, I have developed a new instrument, which we call the Brown heat meter. This instrument is suitable for either temperature measurement or automatic control of temperature, and a brief description of the new instrument might be of interest.

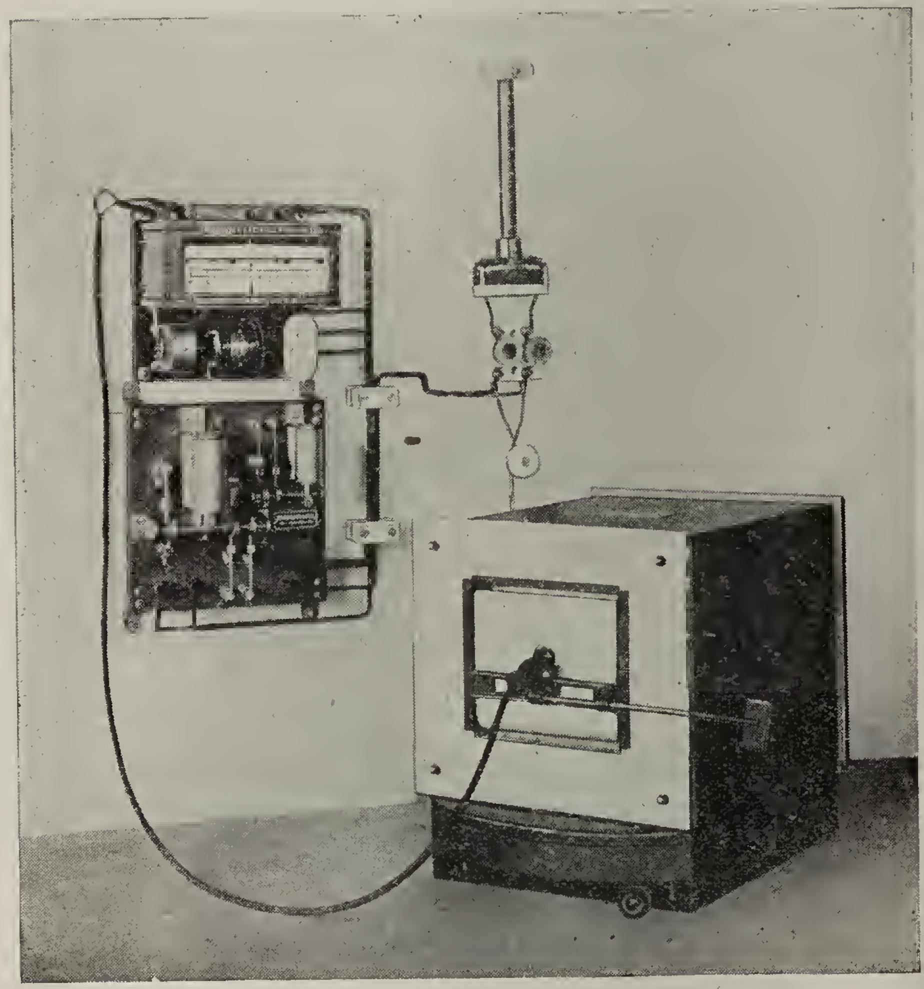
My idea in the heat meter has been to eliminate all the bad features or drawbacks met with in using a milli-voltmeter for temperature measurement.

Possible sources of error in the use of a milli-voltmeter in temperature measurements, even one of high resistance, consist in changes in resistance of the circuit comprising the thermo-couple and the leads or wiring, due to changes in length or atmospheric changes in temperature; also errors can occur due to temperature coefficient of the meter—that is, errors caused by atmospheric changes in temperature of the meter itself. Another source of error is a change in the actual indication of the instrument, due to spring fatigue, abuse or sticking, and to overcome these possible sources of error we have developed this rather interesting instrument.

Briefly, its operation is as follows:

With our standard milli-voltmeter of high resistance, we supply an ordinary dry cell about 1¼ ins. in diameter by 2½ ins. long, and furnish suitable rheostats to reduce the voltage of the dry cell from approximately 1½ volts to a range from 0 to 60 millivolts, the voltage produced as a maximum by the thermo-couples.

In our first operation, we oppose the voltage developed by the thermo-couple to the reduced voltage of the dry cell, and when the pointer stands on zero, it indicated that the voltage from each source is equal. We now in operation No. 2 cut out with a switch the voltage of the thermo-couple and read the voltage of the dry cell circuit by direct deflection. This eliminates the line resistance entirely as in a potentiometer.



The Brown Automatic Temperature Control.

We have now a deflection, indicating the actual temperature developed by the thermo-couple at the moment of reading the instrument, but fluctuations in temperature of the thermo-couple will not be indicated, as we are reading the voltage from the dry cell. We have however, incorporated other operations in this meter.

In operation No. 3 we connect the thermo-couple to the meter instead of the dry cell circuit and we note whether the indications are the same. By switching back and forth quickly, the voltage from the thermo-couple circuit or from the dry cell circuit can be noted. If excessive line resistance has caused the indications of the milli-voltmeter to be lowered as compared with the dry cell circuit, a rheostat is operated to bring up the indications of the thermo-couple circuit to that shown when we are reading the voltage of the dry cell circuit.

We now leave the instrument indicating on the thermocouple circuit, and the errors, if any, which might be due to line resistance or changes in temperature of the line, have been eliminated, and we have a direct reading milli-voltmeter indicating the correct temperatures.

A rheostat is supplied in the meter of 18 ohms, which permits of adjusting the indications for a total change of line resistance equivalent to 16 ohms, or a circuit of two copper wires almost a mile long.

We have eliminated the temperature coefficient of the meter by furnishing a copper resistor in the meter equivalent to the copper or aluminum of the coil, hence in balancing the voltage from the dry cell against that of the thermo-couple we also automatically eliminate errors due to the temperature coefficient of the meter itself.

There is now left only one possible source of error, the change in the actual indications of the meter due to sticking of the pointer, abuse of the instrument, spring fatigue, etc. To obviate this source of error we can supply with the instrument a standard cell with suitable resistors, and in the same manner as the meter can be tested by the potentiometer method we can check this meter. We supply three resistors, for example, where a meter is calibrated for 60 millivolts, we furnish resistors equivalent to a deflection of 20—40, or 60 millivolts, respectively on the scale. If it does not, the error can be noted, and the actual error in calibration is detected.

Two Brown Recording Pyrometers in Yard Office of Metropolitan Paving Brick Co., Canton, O.

Where the instrument is supplied with standard cell, the temperature of the instrument should always be between 5 deg. C. and 40 deg. C., or 4 deg. F. and 105 deg. F.; in fact, standard cells of cadium sulphate of sino-sulphate will be injured if the temperature rises or falls beyond these limits. This is true of any standard cell employed in instruments.

In this instrument we have all the good features of the potentiometer method of measuring temperature, with the advantage that we have a direct reading instrument which can be adjusted once every day or oftener if desired, for the actual line resistance with which it is used, and in the surrounding atmospheric conditions. The meter will then indicate correctly throughout the whole scale range, and the furnace man has the instrument to guide him without hand manipulation, and an inspector can daily check the calibration of the instrument.

(Continued on page 690.)

THE SCIENCE OF ADVERTISING.

Especially in its Application to the Exploitation of Clay Working Machinery.

THE science of advertising consists quite largely in working out various solutions to the problem of how to convert useless spending into useful investment.

This has both a literal and a figurative application because of the fact that not only is there money uselessly wasted in advertising but there are many advertisers who persist in their own minds in regarding the advertising business as a sort of necessary evil, a species of hold-up or useless spending of money. Moreover it is almost as much of a problem to get advertisers worked around to the proper viewpoint of advertising as it is to devise ways and means of turning waste expenditures into profitable investment.

There are many questions of detail and features of the advertising business peculiar to various industries and colored largely by the surroundings, but after all, the central problem is to get the greatest degree of efficiency out of the time and money invested in this work, to get the best in the way of returns and have the lowest percentage of waste.

Advertising a Profitable Investment.

It is easy enough to set this forth, and the logic of it is strong enough that no man is given to a general disposition to dispute it. Yet the trouble with it all is that while machinery men will listen to this kind of argument and admit the soundness of the logic, way down deep in their hearts they still persist in feeling that their advertising appropriation is a burdensome expense instead of a profitable investment. And just so long as they feel this way that preliminary phase of the problem which pertains to the driving home to the advertisers a realization of advertising as a profitable investment, the problem of how to really convert or convince the advertisers themselves and arouse a proper degree of interest and enthusiasm in the subject of advertising is really more difficult of solution than the literal problem of how to conduct an advertising campaign to get the best results.

Those of the trade paper fraternity who come in direct contact of this phase of the situation have had this angle of argument very forcibly impressed upon them during the past few years because when an abnormal or unusual condition of business arises the first natural disposition is to trim advertising appropriations. Some give one reason, some another, but the inclination to curtail advertising is general under such conditions as we have had the past few years. One advertiser will say that he is receiving very few answers for what advertising he is doing, and argues from this that his advertising is not a good investment because it does not bring the same returns as when there is great expansion in business and the industry is putting in much new equipment.

Viewed from one angle this is perfectly natural. We can see, for example, that the average brick manufacturer is not inclined to spend any more money than he can help for new machinery and equipment when business is slow and he has a hard time to make both ends meet.

Emphasize the Saving the Article Assures.

Still, when we look at it from another angle right then is the time when the brick manufacturer should seek more strenuously than ever for ways and means to reduce expenses, to lower cost, and this should bring opportunity for the sale of profit making machines and appliances, those things which reduce labor requirement and curtail manufacturing cost.

It is easy enough for the machinery man to see this, but the problem is how to present this phase of the matter to the brick manufacturer in such a manner as to awaken interest and develop trade.

Part of the answer to that question is in the how of advertising, in the scientific solution of the problem given at the outset. The man with machinery and appliances to advertise should make a careful analytical study of the situation, should take into consideration the fact that it is not increased capacity which is desired so much as reduced cost. Then he should try and figure out what he has in the way of machines and appliances that may be successfully exploited as a means for reducing cost without piling up capacity.

The Psychology of Advertising.

There is a certain amount of psychology in advertising. And after all psychology is nothing more or less than the science of knowing how to do the right thing at the right time. There are times to exploit machines with a view to developing greater capacity, and there are other times when the problem is not one of capacity, but one of economy. A little study of these matters should easily inform a man as to what he should feature in his advertising and what not. Also it suggests that proper featuring of the right articles in advertising should result in more inquiries and better returns during times of depression than the average advertiser has usually been able to get.

We have all around us all the time big examples of what advertising can do. We have it in the clay working industry in connection with the coming into general use of various appliances. Practically all of these things are comparatively new and without proper means for exploitation and a liberal investment in advertising it is easy enough to see they would never have made the progress they have. Then we can turn to other industries all around us and see other examples that perhaps will appeal more strongly because they are apart from the business and can be seen with an impartial eye.

Examples of What Advertising Has Done.

The Singer sewing machine is one remarkable example of liberal and widespread advertising. The Singer sewing machine is found today in every country of the world and millions of dollars worth of them are exported annually to every country and into the most remote regions.

The International Harvester Company and some other agricultural implement and machinery concerns have practically demonstrated what can be done by exploitation. Also what they have accomplished furnishes a hint to the clay working machinery men in the matter of export trade possibilities. These people had built up a trade amounting to thirty million dollars in export before the war. The war figuratively knocked it into a cocked hat, but it is coming back again in a manner that proves not only the original merit of advertising, but also that persistence brings returns. The need of foodstuff the world over made a wide opening for modern implements, especially tractors and labor saving devices, and the people interested in pushing these have been busy and been getting results.

It is true they have used other things besides printers' ink in spreading the doctrine of their offerings. They have used demonstrations. The demonstrations are a sort of follow up to the printers' ink, and this is a form of systematic work carried on by extensive advertisers everywhere. Otherwise the advertising may run to useless expenditures and look like not high enough in the profitable investment.

The Function of the Traveling Salesman.

With brick machinery and appliances as with machines and appliances in many other lines, the thing which takes the place of local display is the traveling salesmen and demonstrators as a follow-up. Following right on the heels of or coincident with an active campaign of advertising machines or appliances calculated to be a good investment for clay workers there should be either traveling salesmen or local representatives in different sections to call on those who make inquiry in answer to the advertising and to canvass the territory and see prospective customers who have not answered it.

A number of years ago when one of the old time enterprising agricultural machinery houses had developed a new and greatly improved proposition in the way of a hay baler they not only pictured and described this in advertising, but they made at considerable expense a number of working models that could be carried by salesmen and they put live wire salesmen at work in practically all the territory of the country where hay balers were an item of importance. It cost money, too, lots of money, but it paid, and, what is more, this concern built up a big business during a time of depression while many other concerns were having a hard time to make both ends meet, and were curtailing their advertising as well as reducing their operating forces.

The Value of Follow-Up Methods.

In the matter of clay working machinery it may be advisable and desirable to make models in some instances. In others it is practical to thoroughly illustrate with pictures, diagrams and descriptive matter. The big thing about it is to have a competent man call on the trade as a follow-up to advertising, because the man can not only explain the virtues of the offerings, but he can see the condition of the plant itself and figure out from this a definite proposition in the way of money saving for the customer by investing in his machines and appliances.

One could dwell at almost any length upon the importance of the follow-up, how to do it, and it is essentially a part of advertising. Advertising, however, as generally interpreted by business men, consists largely in taking space in periodicals and making an appeal through this space for trade. This is really the most important form of advertising, too, and it deserves much more earnest attention than it has received in the past.

Advertising in periodicals is something every machinery man should strive to make a paying investment of all the time and not merely an expense account.

Constant Advertising Pays.

In times of financial stress and business depression it doesn't help the cause much to figuratively quit and lay down. In fact, it is the other way round, the doing of just those very things is what aggravates these periods of depression and makes them worse than they would be otherwise.

When an unusual psychological condition develops in the business world, whether it be a period of depression or a period of great hustle, the right idea, the progressiveness and the money-making idea, is to carefully analyze the situation, see what it is you have to offer that will most likely make an appeal, and give to the buyer the best returns for his money, then feature it, feature it big in the advertising, and follow it up industriously.

SHOULD HAVE AN HONOR FLAG.

The Alliance Brick Company, Alliance, Ohio, was the first Alliance plant to go over the top in the Liberty Loan campaign. The industrial plants of Alliance were apportioned $100 for every employe and the brick company, with fifty employes was the first to send its check for the first installment on the bonds.

One of the things that marks for progress of the clayworking industry this year is a noticeable improvement in burning methods and burning control.

OBITUARY.

An Unusual Death Toll in the Clay Craft.

THE GRIM REAPER has cut down several well known clayworkers during the past few weeks. Seldom have we been called upon, if ever, to chronicle at one time, so many fatalities among the clay craft as we have to record at this time.

ALFRED YATES. First came the sad news of the death of Alfred Yates, one of the faithful members of the N. B. M. A., who for many years was conspicuous at all gatherings of the Association. He had been in poor health for some time. The summons came to him at his rural home, "The Homestead Farm," near Bedford, Mass., April 17. The immediate cause of his death was heart failure. He was born in Great Malvern, Worcestershire, England. He came to the States when in his teens and soon afterwards engaged in the manufacture of common brick at Cambridge, Mass. Fifteen years ago he became identified with the Shawmut-Paving Brick Works, Shawmut, Pa., and was general manager of the plant at the time of his death. For a number of years he was engaged in a similar capacity with the Johnstown (Pa) Brick Co. He was a conscientious and consistent advocate of brick and terra cotta and all clay products for that matter. Had mastered the technical side of the business and was ever ready to give of his store of knowledge to others in the industry. He was a thirty-second degree Mason and was buried with Masonic honors in Shawsheen cemetery, near Bedford. He was 63 years of age and leaves a widow and one son, Ernest S. Yates.

Alfred Yates, Shawmut, Pa.

WILL C. THOMAS. Head of the firm of Thomas Brothers, the leading face brick dealer of Detroit, died at his home recently, after an illness that had kept him from active business effort for several months past. Mr. Thomas was a man of unusual talent. His was a happy disposition and his genial cordial manner endeared him to all who knew him. He leaves behind him many enduring monuments in the form of beautiful brick structures in and about Detroit. He had been a member of the N. B. M. A. for many years and was one of the leading spirits of the Face Brick Association.

JOHN M. JENKINS. The death of Mr. Jenkins, at his home at Montgomery, Ala., April 26, was not wholly unexpected for he had been in poor health for several months. Mr. Jenkins was in his 63d year and had been a representative business man, operating a successful building brick plant for many years. He had served as state vice-president of the N. B. M. A. and took great pleasure in the annual meetings of the Association as long as his health enabled him to do so.

MRS. CHRISTINA F. CLIPPERT. The death of Mrs. C. F. Clippert, mother of the President of the N. B. M. A., at the age of seventy-three years, is announced in the Detroit Press. Mrs. Clippert had been a resident of Detroit since she was five years of age and had seen that city grow from a mere village to a great metropolis. Five sons and one daughter survive. They are Dr. Fred J. Clippert, George H. Clippert, Fire Commissioner Charles F. Clippert, William Clippert, Dr. Julius C. Clippert and Mrs. Hattie S. Gorenflo.

A. R. D. JOHNSON. The announcement of the death of Mr. Johnson, of Raleigh, N. C., was a shock to his business associates and will be a painful surprise to his many friends in the industry, for he was apparently a vigorous man in the prime of life. He left home on a business trip, apparently in good health, and was stricken without warning, April 30. Evidently death was due to heart trouble and was wholly unexpected. He was a leader in the business activities of Raleigh, N. C., was president of the Cherokee Brick Co. and also president and treasurer of Johnson & Johnson Co., manufacturers of brick and dealers in coal, wood and ice. He had taken a prominent part in the organization of the brick men of North Carolina and his death is a great loss to the brickmaking craft of that section, and also to the National Association, of which he was state vice president.

A. R. D. Johnson, Raliegh, N. C.

A PATRIOTIC DUTY.

It is not necessary for us to tell the readers of The Clay-Worker that War Saving Stamps are one of the best possible investments. They appeal particularly to those who are not accustomed to invest in stocks and bonds. If you have not already started your book of Thrift Stamps, fill out the coupon found on page 626, hand it to your mail carrier, and he will do the rest. Very simple, yet really patriotic.

SPRING MEETING OF NEW ENGLAND SECTION, A. C. S.

Twenty-five members were present at the April meeting of the New England Section of the American Ceramic Society, which was held at Boston City Club. A dinner was served at 7:00 o'clock, after which Ross C. Purdy, of the Norton Co., Worcester, Mass., gave a report of the annual meeting of the A. C. S. at Indianapolis, and H. E. Howe, of Arthur D. Little, Inc., Cambridge, Mass., spoke on the manufacture of optical glass. It is anticipated that a meeting of this section, of which Charles L. Walduck is secretary, will be held every month.

THE RELATION OF THE HIGHWAY TO THE CITY'S WELFARE.*

THE ART, THE SKILL, the ability by which the city editor shall word-picture the account, the detail, his ideas, all of his efforts for his constituent readers is, to him charged with that duty, a most worthy ambition, to attain such excellence that his readers shall be refreshed, invigorated, impressed, enlightened and guided "whithersoever he will" is a great accomplishment. But underlying the "whithersoever he will" there must be born some purpose, some object, that will make possible great benefits to his community. Co-operation, civic betterment, social welfare, cultivation of an interest in art and science, polish if you please, and character in all that is best for human enjoyment and uplift of humanity should be well kept in mind. But at the bottom there must be **material welfare**, prosperity, business progress and industrial growth, to furnish the substance and life blood to keep alive activities once started.

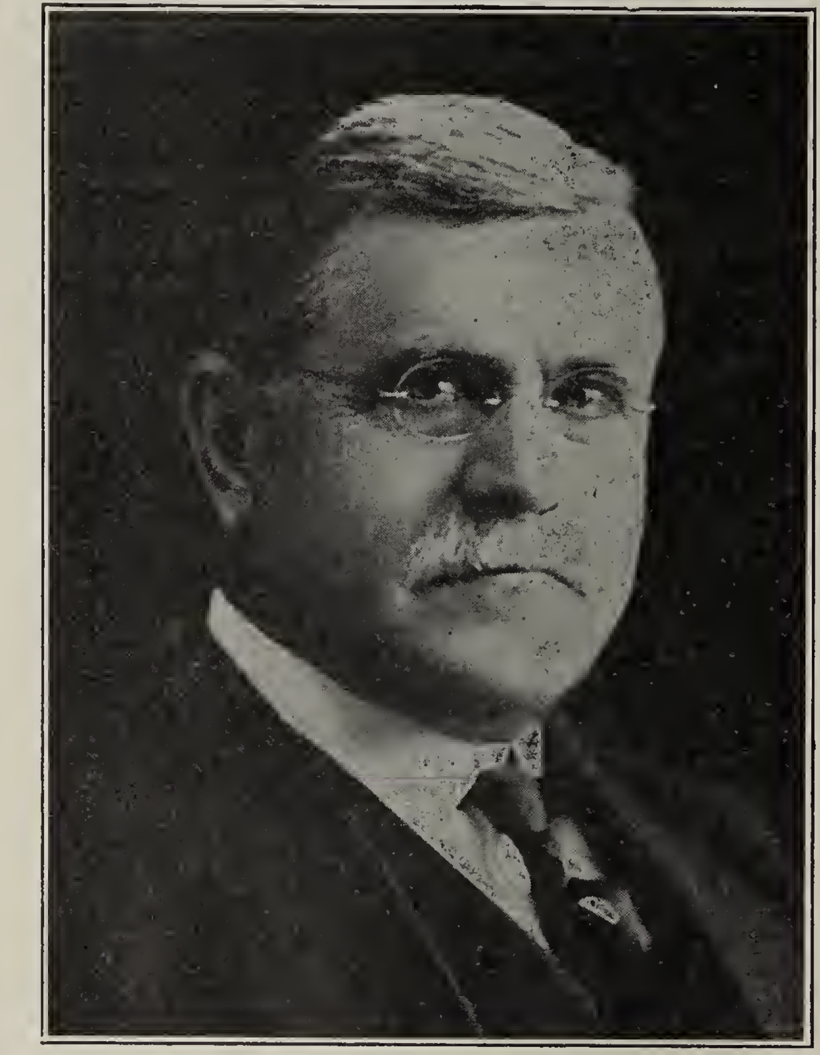
In the earlier development of this country where cities were planted which grew, the good Lord had placed a river or lake beside them and no city grew which was not so favored. Such cities were the only ones which developed into any commercial importance whatever, during a period of many years. City growth in this country was limited by the advantages of waterway transportation accommodation.

But a transportation epoch was interposed by the introduction and use of steam railways which revolutionized the rule of the past; in its quickness, its frequency, its promptness, its convenience. They became the dependence, the nerve, the fibre and sinew which operated and connected up the entire industrial activities of the nation.

Steam transportation in its adaption to location and routing, became a rival agency of greatest magnitude in controlling the development of both greater and lesser commercial centers. River and lake towns, self-satisfied with the advantages afforded by their providential facilities of transportation, and unappreciative of and ignoring the new man-made intervention went into decay. Steam railroads became the only means of rivalry which were at all effective in achieving great commercial advantages which enabled inland towns to become claimants for great industrial centers. Great sums were voted and paid out of local treasuries and donated to corporations building into and connecting up towns with railway routes. Cities vied with each other in bidding for such a privilege. Almost unlimited franchises were granted to such railways as might be secured. States placed upon their statute books by unanimous votes of their legislators, laws providing for such aid and encouragement. In the midst of all this great activity the settlement, growth and development of the country was centered upon and became entirely dependent upon the railways secured. In proportion to railway facilities secured, cities languished, stood still, grew or took a backward step. Cities which relied entirely upon their waterway advantages to keep in the running are now completely out of the race. Only those which supplemented their waterway transportation with steam railroads are in the race. The relative advantages of rail transportation possessed by various cities are now clear to every intelligent person. Cities without correct vision during this transportation revolution are turning prematurely gray headed. They must be satisfied and content to sit upon the street bench and whittle away their time, there being nothing else for them to do. Their opportunity to come into their own was lost.

But the impetus of business born out of this great period of development has pushed ahead in growth beyond all preconceived or anticipated possibilities, which, together with the exigencies of war, have brought us up against a condition unparallelled in the commercial history of our country—indescribable by word but thoroughly understood by business and perhaps by everybody when you mention transportation congestion or transportation deficiency—that is to say, the condition is understood, but not the situation as a whole.

You cannot relieve congestion by adding to it; it can only be done by taking from it. During the last two years more cars have been in actual service and greater tonnage has been moved by the railroads than in any period of their history. They have reached their limit. If you expect the Government now in control of the railroads to move more freight, forget it. It sounds big when you read that the Government has ordered 10,000 new engines and 100,000 new freight cars, but that many engines and cars are scrapped every year by the railroads of this country. Even if they were not just to take the place of the discarded cars, where could you put them? The railroad tracks are congested with cars and engines already. Yet it must be remembered that in the last two years the actual request for cars has ranged from 34,000 to 150,000 monthly, not to say anything of the cars for which no request was made because of the discouragement felt which found expression in "What's the use?"



Will P. Blair, Cleveland, Ohio.

Is the rotting of potatoes in the field to be a continued performance? Will the great surplus corn crops to come, rot in the cribs as happened to the crop of last year? Are the people of this country to shiver throughout another winter and winters still to come? Shall we see in the papers again and again that army transports so badly needed on the battle front in France are wallowing hub deep in the mud in their struggle to reach the seaboard? I am ready to say "No, a thousand times no."

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*A paper by W. P. Blair, read before National City Editors' Convention, Indianapolis, Ind., May 12, 1918.

Have cities attained the limit of their commercial importance? No! The people of this country must realize that just now another transportation epoch is at hand. To no set of men in this country is given the opportunity to direct tho public's vision toward the relief which, if not providentially at hand, is at hand at a most opportune time.

The city that has the vision to improve its highways to that standard of high efficiency such as will permit their use to a maximum degree every day throughout the year and which will not be content until such roads reach to the limits of a commercial interchange, and which will meet all its wants, is the city of great future growth and prosperity, but the city that requires a spy glass to see this opportunity will stand still only long enough to turn around and go backward.

What is the instrumentality that marks the time of the new epoch in transportation—nothing more nor less than the going and coming of the auto truck—but it must have a proper track to run upon. With such a track, such a highway is worth as much—will pay as large a part in increasing the growth, prosperity and industrial development—as any existing steam road of equal length and equal connections.

Although it was built inadequately, there is a brick road connecting the cities of Akron and Cleveland, over which there is being transported, consignments to either terminal and towns lying between almost as great a tonnage in the same length of time as over the three steam railroads combined. The actual figures covering one week's operation for that hauled over the three railroads was 6,630 tons, and over the one highway, 5,014 tons.

Just at this time the skill of an ideal city editor is wanted to word-picture to you the city of the future now relying upon an ideal system of highways for commercial supremacy. The time and the opportunity is here. The city editors of this country will have done their bit only when this program is completed to its utmost in their respective cities. There is but one caution; in the effort to stimulate the public to do for themselves this great thing, there must be an exercise of sufficient courage against any further expenditure in this country for building highways utterly inadequate for the service they will be called upon to bear.

A ninety-pound fine quality steel rail is not sufficient unless supported by sufficient ties, properly ballasted, overlying a thoroughly drained road bed. Neither will it do to depend upon the quality of the brick alone for a first class brick roadway. A drained roadbed and adequate ballast and foundation is just as essential for a durable brick roadway as these requirements are for a steam railroad.

Is there an emergency for this new world of transportation? Yes—a usable highway outbound fifty miles from every coal mine would keep us all warm next winter, and there is a bugle call for roads from the very front line of battle. As the highways will serve the great industrial activities of peaceful commerce and make us all financially strong for war, they must now be called into immediate service as rapidly as possible—for out of this rich territory, of which Indianapolis is the center, must go the food and supplies to sustain boys at the front, for they are using every moment of their existence, tonnage of ammunition and food which starts to them over the highways, which they must have to win this war.

The time of the year is here now when we ought to begin to get some light on the possible extent of street paving activities during the summer. Evidently a shortage of help will slow this work down some, but at that there will perhaps be more doing than some figured on, as well as some building of good roads.

FEW WOODEN HOUSES IN SPAIN.

Consul Louis F. Dreyfus, Jr., writing from Malaga, Spain, on the subject of the lumber needs of that country, says that no one fact attracts the attention of visitors to Spain more than absence of wooden houses. Dwellings are constructed of brick and stone, floors of tile, stairways of concrete or stone, roofing almost entirely of tile. About the only use of lumber is for bridges, warehouse construction, interior finish and furniture. What is true of Spain at this writing will be true of practically all countries some day. Building will be for permanence, out of permanent material, in which clay products stand out conspicuously as best and most easily available.

CHICAGO ANNEXES INDIANAPOLIS.

The inevitable has happened. Chicago, long covetous of Indianapolis, has at last been successful in acquiring a direct interest, taking a first line trench, as it were. W. D. Gates, author of "Button-Hole Talks," has purchased the Indianapolis Terra Cotta Co., located at Brightwood, a suburb of the Hoosier capital, and will operate same in connection with the American Terra Cotta and Ceramic Co. Mr. George H. Lacey, who has been superintendent of the plant for many years, will continue in that position. The former proprietor and manager of the plant, Benjamin H. Walcott, and Mr. Gates were warm personal friends, and it would have been a great satisfaction to Mr. Walcott could he have known that the business in which he took so much pride would, after his demise, come under the direction of his old pal. Verily, the whirligig of time brings many surprises. The Indianapolis Terra Cotta Co. is one of the pioneer terra cotta plants, and under the new management will no doubt extend its field of operations materially.

"MORE BRICK!"

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Wants The Clay-Worker on File When the War Is Over.

Editor The Clay-Worker:

Enclosed is a check for two dollars to cover my subscription to the Clay-Worker for the year 1918.

While I am in the army now, and will have but little chance to look over The Clay-Worker, I think it best to have it sent to my home and I can read up on the files when I return, later. So send your valuable publication to the same address.

I have met several men here who have been in some branch of the clayworking industry, and it is fine to meet some one to whom you can talk the "Shop Talk" of your once civilian life.

Respectfully yours,
Camp Sherman, Ohio. LIEUT. E. J. MOORE.

Machine Wanted for Cutting Pumice Stone Brick.

Editor The Clay-Worker:

We are in the market for a machine capable of cutting pumice stone bricks 3½x2½x8 inches, into slices 5/16 inch thick. We would greatly appreciate it, if you could give us the names of manufacturers making a machine capable of doing this class of work.

Thanking you for the above, we are,

Yours very truly,
SWIND MACHINERY CO.

Business Good in the Stoneware Line.

Editor The Clay-Worker:

I am enclosing check for which please send The Clay-Worker for another year. I have not been in business for myself very long, and cannot get along without The Clay-Worker. The stoneware business is better than I have ever known it to be and I have been working in this line for over twenty years, but never owned my own shop before. I find my greatest trouble is in getting potters. Will have to put in some moulds.

With best wishes, I am,

Yours truly,
DOUGHERTY POTTERY WORKS.

Good Suggestion From Arkansas Brick Manufacturer.

Editor The Clay-Worker:

I hand you a letter which we gave to each one of our employes May 1, with his pay check, and which we think will help both ourselves and our men. It may give some other manufacturer an idea, so thought we would pass it along.

W. W. DICKINSON, Jr., Supt.

To Our Employes:

The company realizes that every man on the plant needs and must have more money to meet the increased cost of living.

To give the men more money is one thing and to get it back in increased production is another. If we can run the plant to capacity and ship the brick out every day, and at the same time keep up the regular plant repairs we can afford to pay it. A little lost time every week and the profit is all wiped out.

Fuel has doubled in price in the past two years and repairs and sundry supplies have advanced from 100 per cent. to 500 per cent. Take it altogether, it is a difficult proposition at the best, under present conditions, to run any manufacturing plant at a profit. We are better off than most manufacturing plants and it is due to you men on the yard. You have proved loyal and have worked harder the past year than ever before, and we appreciate it.

You need more money and you are going to get it, but with a string tied to it. To every man who works the entire week (from Thursday to Thursday) we are going to add to his check $3.00. No excuse will be accepted for not being at work every day in the week. You get the extra $3.00 if you lose no time. Look at your check and if you put in a full week your $3.00 will be included—otherwise not.

Yours truly,
ARKANSAS BRICK & TILE COMPANY,
W. W. Dickisson, Jr., Supt.

The Smokeless Kiln.

Editor Clay-Worker:

I see by the Cincinnati Enquirer this morning, the Fuel Administrator has cut the fuel allowance to the clay products manufacturer from 15 to 50 per cent., needless to say what this means to the trade; financial ruin to a majority of the manufacturers with no hope of recovery, as coal will never be sold again at pre-war prices, neither will the supply be sufficient to run the brick yards to capacity on the old system of burning. It is expected after the war the volume of trade in America will increase to such an extent, not only in home consumption, but for the world at large in which America will play the leading part, consequently the population will increase by leaps and bounds and clay products, bricks in particular, will be in greater demand than ever. Consider what the requirements for clay products will be in the very near future with all the substitutes for building materials; nothing has stood the test of time, either above or below the earth, like clay products and the demand is greater than ever for every kind of its varied manufacture.

It is the old, old story, the survival of the fittest, and only those manufacturers who put their house in order today will weather the storm. Think of the millions who do and who will require comfortable homes to live in; homes that will stand the test of time; homes that when a man has built he knows will last not during only his life but his children's children.

Look at the beautiful old country homes built with bricks in England that have stood the ravages of time for centuries and today the mellow tone of the old bricks gives the buildings a charm and appearance that nothing else can or does, and which all connoisseurs envy and covet, but which money cannot buy. Is there any other material in the world that gives the charm and tone to a building like the old bricks? What visions they conjure up in the mind, of the far away days when the old world seemed to be young. Buildings of every other material have all perished and gone, but the old bricks still stand and seem to say to mankind, from the earth I was made and as long as the earth lasts I shall last. It is therefore of national importance that anything and everything that can be done to reduce the cost of manufacture of bricks should be done. It is not cheap labor and long working hours that will do it—cheap labor and long working hours in the past have been the back of the industry. Brick yard work used to be looked upon as the last stage for a man to get his living and I am afraid it is very much in evidence today.

I am pleased to note, however, that it is dying and the trade in the future will be able to pay a living wage and the workman will go to his work feeling as important as his brother workman in any other trade.

Machinery is very young in the trade and has been very costly. Experiments in the past and not a few of the failures have been due to this cause, but it is now becoming more perfected. But the greatest setback to the trade has always been due to the burning, the most important and vital part to success in brick making. Coal and wood being very cheap in the past and the work being hard, rough and hot, it has received less attention than any part of brick making and bricks are being burned today as they were from time immemorial, but from increased price in fuel and more demand for bricks, those days are passing never to return. No clay products plants will ever be constructed in the future without making burning and the most efficient kilns the first consideration. Kilns that will not only burn the ware, but will burn without losing any heat or emit smoke. Such a kiln I have just invented (see ad on page 705) and am willing to supply a limited number of responsible firms with plans, superintend erection and burning for out-of-pocket expenses only. We are receiving letters from England, France, India and China on the kiln question, so you see it is not alone in America that the trade is suffering from burning problems and the fuel situation. Yours respectfully,

H. WEBSTER.

Orders Now Exceed Quota According to Curtailment.

Editor The Clay-Worker:

We are in a somewhat peculiar position in regard to the 50 per cent. curtailment order.

Our average sales for the last two years have been 25 million per year, which places our curtailed production for 1918 at 12½ million.

On acount of the abnormal building activities in and around Norfolk and Newport News, to cope with, which the local brick plants were entirely inadequate, we have been running to full capacity all this year, and, with the brick delivered, together with orders booked, have already passed our 12½ million quota.

As a large volume of orders now booked are for Government and allied construction projects, we think that very probably the curtailment order, so far as we are concerned, will be qualified to take care of these war projects.

We are now looking into the matter, and will keep you informed as to results.

Very truly yours,
CHEROKEE BRICK COMPANY,
C. C. Hillyer, Vice-Pres.

DRAIN TILE PLANT WANTED IN ARKANSAS.

H. F. Moeller secretary-treasurer of the Bliss-Cook Oak Co., Blissville, Ark., writes that southeastern Arkansas is coming to the front very fast in an argicultural way. The soil is of the very highest type, but badly needs tile drainage. The work of farm drainage is handicapped by the high cost of drain tile, there being no local manufacturers of that important commodity. Mr. Moeller is of the opinion that a well-located, well-managed drain tile plant in that section would prove very profitable. There is plenty of suitable clay and ample financial assistance will be given to an experienced tile manufacturer who would establish an up-to-date tile plant there.

The mechanical ingenuity and the resourcefulness of the United States grows and thrives on problems and difficulties, and just as it is solving the labor problem on the farm and among the industries it will eventually solve the problem of supremacy in war.

TRADE NEWS NOTES.

The Hershey Corporation, Hershey, Pa., advises us that it is in the market for brickmaking machinery.

We have a communication for R. E. Ellis, recently of Ennis, Texas. He is requested to send his present postoffice address to the office of The Clay-Worker.

The Lakewood Engineering Co., Cleveland, Ohio, announces the opening of a district office in Milwaukee, with Fred T. Kern and J. N. Young, both formerly of Kern & Hunter, Inc., as its representatives. The Lakewood Co. makes a specialty of construction equipment and industrial haulage, including single and double-deck dryer cars, dump cars, etc. See ad. on back cover page.

The refractories division of the clay industry is exceedingly active and prosperous these war times, and as a result there is an unusual demand for machinery and other equipment used in the fire clay lines. The Machinery Specialty Co., Inc., of Joliet, Ill., reports an unprecedented demand for steel molds and dies for making fire brick, silica, crome and magnesite brick and also shapes for coke ovens, all of which are among their specialties.

The brick manufacturers of Louisiana gathered at Alexandria, the home of C. N. Adams, May 7, to talk over trade conditions. Mr. Adams is an old-time member of the N. B. M. A., so it goes without saying that the meeting was a pleasant affair. Building, present and prospective, in that state is fairly satisfactory. Most of the brick plants are operating as usual.

TILECRAFT.

Tilecraft is the title of a well-gotten-up pocket size periodical which is a journal dealing with skilled art and progress in tilecraft, published in the interest of the tile business by the Associated Tile Manufacturers, Beaver Falls, Pa. In this new publication both the technique and the artistic of tilecraft, especially the relation to mantles and floors, is being presented by good authorities and in splendid typographical form. It should serve a splendid educational purpose among tile manufacturers, architects, dealers and setters, and it is to be hoped that many of the messages contained in it will be passed on to the general public.

SAFETY IN TILE MAKING.

The supplement on Preventive Appliances for American Industries in April had for its subject "Safety in Tile Making." Illustrating the subject various tile machines were shown with what might be termed the usual standard safeguards around belts, pulleys and gears. Very little of the text matter, however, was given over to a description of mechanical safeguards, because the entire attention was centered upon the matter of lead poisoning which is regarded as the most serious danger in this industry, and the necessity for unusual sanitary precautions as a means of safety against it. The main recommendations are for the most up-to-date and complete facilities for washing, including plenty of hot water and soap. Then they advise a special lunch room and such general precautions as make for safety against lead poisoning.

While winning the war there will naturally be some hardship to industry encountered, but this should not be interpreted to mean that the more hardship we can work upon the industry the sooner we will win the war. Readjustments are necessary, but at the same time let us not forget that the upbuilding of industry is one of the essentials.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
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☞Subscribers when ordering a change of address should give both the old and new address.

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Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. MAY, 1918. No. 5.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

There's an old saying about half a loaf.

* * *

Even the drain tile men are given a touch of curtailment.

* * *

Indications are that brick will be scarce and show an improvement in price before the summer is over.

* * *

Each family war garden is of itself a little thing, but these, like the baby bonds, count up big in the aggregate.

* * *

One of the unpopular pastimes of the day will be that of finding the difference between half time running and half capacity.

* * *

Since the great transportation problem of the day is still that of ships, it is encouraging to learn that our shipbuilding work is making greater progress.

* * *

As the clayworking industry stood at the head of the list, aside from railroads and the metal industries and gas and byproducts, it was naturally the first to be picked on for curtailment.

* * *

True patriotism consists in putting forth effort as well as putting up money.

* * *

The wheat fields are giving promise that the bread ration will be better soon after harvesting starts.

* * *

There was a time when we were being begged to buy a bale of cotton. Also once upon a time they burned corn for fuel out in Kansas.

* * *

While the curtailment order is in effect is a good time to overhaul and reconstruct kilns and improve the equipment generally for more efficient work in the future.

* * *

It is a good time to spread the doctrine that there is a difference between building houses and building homes, and to hang the Build With Brick sign on that doctrine.

* * *

Splendid work is being done by the various committees and sub-committees of the American Ceramic Society, both for the clayworking industry and for the Government.

* * *

What good roads have been built heretofore are serving the needs of the country so well in the present crisis that it should encourage a continuation of road building activity, even during the war period.

* * *

A wider distribution of war industries over the country would do much to solve the housing problem and to keep the building material business more evenly balanced. Surely there is room for some effort at better adjustment here.

* * *

Of one thing we feel pretty sure, when the end of the curtailment season is over there will be no surplus of brick or other clay products in the country. This will mean a big business time ahead of the industry, and now is the time to prepare for it.

* * *

If the Fuel Administration could have seen fit to just cut the fuel allowance in half instead of putting the brick plants on half capacity, it would have furnished more opportunity and encouragement for the introduction of new burning methods and devices to effect economy in fuel.

ONE OF THE WAR'S FORCED BENEFITS.

No other line of industry is making much better progress than clayworking in the way of becoming self-sustaining with the supply of domestic raw material. We have depended much on other countries for special clays heretofore, because that was easier and simpler than developing them here. Now that the special clay development has been started, however, it will undoubtedly be kept up, and this country will be independent of the world in the matter of all kinds of clay material.

THE FUEL PROBLEM.

The fuel problem continues to develop new and unexpected angles, and there is some indications at this writing that there may be an excuse for the Fuel Administration to reconsider its ruling as to curtailment in clayworking.

For example, there are some reports coming in which show that coal mine operators are finding difficulty in many sections in marketing their steam and industrial coal that is screened out to produce the needed supply of domestic lump. That is an unusual condition for this time of the year, but it is an actual condition in some sections of the country. If it is a condition in enough of the country it will bring a new phase to the whole fuel situation.

As a result of last winter's experience and the advice of coal men and the Fuel Administration most of the domestic users of coal are placing their orders for next winter's stock early. The filling of these orders for domestic lump seems to be creating a surplus of slack and nut. The question is, what to do with it.

Since the clayworking industry is one of the important users of this class of coal, one of the simplest answers to relieve a situation of this kind would be to reconsider the order of curtailment and let the clayworkers consume more of this coal, so as to clear the way for the early stocking of domestic coal.

BRICK WASTE AND ROOFING.

Among the proposals for building construction recently asked for by the Navy Department was one for a cottage and garage of frame construction which holds more than passing interest to the clayworking fraternity because of specifications in regard to the roof. The specifications call for "pitch and crushed brick roofing." Composition roofing has been making great progress the past few years and an important item in much of this class of roofing is the face finish which is made up generally of pitch or asphalt and crushed stone or sand. Here is an instance where crushed brick was asked for, presumably to get a more desirable color. It may be assumed that any well burned clay, whether it be in the form of brick, pottery, sewer pipe or drain tile, when crushed will make a good roofing material for use in this way. This suggests opportunities to use culls and waste in clayworking in the roofing trade in a manner that will improve the appearance of composition roofing as well as furnish a market for some waste clay products.

CURTAILING THE OPEN ACCOUNT.

One of the results of war conditions is a strenuous effort all around to curtail the open account. In some instances this means cutting down on the extension of credit. Also sometimes this idea of curtailing credit is carried too far and may in time bring reaction. The proper interpretation of curtailing open accounts is not so much through cutting down credit as through putting it into more definite, specific form, in the form of notes or trade acceptances. The popular idea today is the trade acceptance. Some strive to reduce the open account by heavy cash discount, and this may help some, but the big opportunity for helpful work along this line is in the wider use of trade acceptances and notes to the end that accounts instead of being open and indefinite will be closed and definite, and closed in such a manner that the "paper" closing them can be used for banking purposes.

THE BRICK TRADE.

From present indications the country may find itself short of brick before the summer is over. The production was already light and many plants had not started up this season. Meantime, here came the curtailment order which puts an enforced limit on the production.

Now along come reports from various sections of country stating that brick are scarce among dealers in building material. With both the natural and the enforced curtailment and these reports of scarcity coming along, it looks as though in many sections of the country, before the summer is far advanced, the main problem will be where to get brick, not where can we sell it.

This means that those who have brick, instead of getting nervous and unloading at any price they may be able to obtain, should look about and see first. While building operations as a whole are limited and lower than normal, there is an actual increase in activities in some sections, while in other sections there is a natural scarcity of brick. So, unless the signs read wrong, brick will be brick before the year is out. Don't give away or sacrifice what you have on hand, but get a price for them or hold them a while and watch the outcome.

UNPATRIOTIC AGITATION.

This is no time for the shorter day slackers to indulge in agitation for shorter hours. No matter what logical arguments may be brought to bear for a shorter working day during normal times no true patriot can bring this kind of argument forward in the present day when the great cry all around is for more help and more work.

There are three ways to get more work done. One is to get more men; one is for the men who are available to work more hours, and one is to bring into play labor saving machines and devices caluclated to increase the capacity of man.

This is a time when we should make the fullest use of all three ways open to us for increasing the man power of the country in industry. Now is no time for increasing the hours of idleness, whatever arguments may be made for it at any other time.

THE SILO BUSINESS.

This promises to be an unusually active year in silo building because the government is encouraging the building of silos even though it strives to discourage all unnecessary building. More silos are considered essential in food conservation, consequently the agricultural department is encouraging this work. Meantime farmers have more money and are more inclined to silo building.

The silos furnish several opportunities for clayworkers. There is not only a chance for business in silo blocks, but even where they are built of lumber there is a chance to get in on the foundation work with brick.

Then in addition to silos this leads, naturally, to barns and other outbuildings which open a broader field for brick and clay products of all kinds. It is a field too that offers splendid results for active cultivation this summer.

A SCHOOL FOR MANAGERS.

The special school and the special training idea is not only a strong factor in our army development, but through war activities it is becoming a stronger factor in our industrial life. The progressive people of today are not satisfied with vocational training for youngsters, but are introducing the idea of special training under government auspices for employment managers.

There are two major lines of effort involved in the training of managers. One is the science of production, and the other is that of industrial management so as to promote harmony in team work and reduce friction and strife.

The first specific effort of this kind was started at the University of Rochester in the latter part of March under the co-operation of Rochester factories and the faculty of the University. The work is being undertaken under the supervision of the industrial service sections of several departments at Washington, including the Emergency Fleet Corporation, the Ordnance Department, Quartermaster's Department, Department of Labor and the Navy.

It is thought that this experiment will be followed by the establishing of similar courses at Boston, New York and elsewhere. This is an effort in keeping with the spirit of the times. Just what may result from it will depend both upon the co-operation given the idea and the spirit in which it is handled.

TURNOVER AND PROFIT.

One of the questions invariably asked by the Federal Trade Commission experts when they come to the matter of checking up an industry with a view to determining items of cost and possible profit is about the frequency of the turnover. The whyfore of this is easy enough to understand when we think about it, because there is a direct connection between the percentage of profit, the turnover and the actual net profit per year in a business. One of the troubles seems to be that the clay working industry has not done enough thinking upon this question of turnover. Can you tell off hand what is the frequency of turnover in the clayworking industry, whether it is once or twice a year? Some contend that on an average the clayworkers do not make one clear turnover a year. Some other lines of business figure on from two to three turnovers a year. Plainly here is a point that needs some attention in planning for figures on cost and profit per cent. in the clay working business.

BOOK OF SMILES.

The current issue of the "Book of Smiles," as usual, contains a number of timely hits. It solves one of the many troublesome phases of the income tax puzzle by declaring that "Poker winnings are subject to income tax; but alas! poker losses cannot be deducted from one's revenue statement. We should worry." A war item reads, "Another species of shell shock is experienced when you bite into a nut cake made by a careless baker." Of course, the issue contains a special announcement urging its readers to buy Liberty Bonds, and also a timely suggestion for brickmakers to investigate the merits of the Standard Dry Kiln, which is set forth in part in their ad. on page 632.

"CLAYWORKING MACHINERY."

The above is the title of the American Clay Machinery Company's latest catalogue, which is a most elaborate and complete publication. Every clayworker, whether or not a user of the American "Built Right, Run Right" machinery and appliances, will find this a most valuable volume for ready reference. Its 441 pages form a most interesting compilation of facts pertaining to the purpose, construction and operation of almost every machine or device, including dryers and kilns used on clay product manufacturing plants. It is splendidly illustrated, and the descriptive matter is most entertaining and instructive.

In this catalogue are published many valuable articles not usually found in volumes of similar purpose. For instance, there appear such treatises as Gearing and Its Importance, The Importance of Repairs, The Manufacture of Roofing Tile, and Mechanical Brick Setting. This is incidental in connection with special departments, the complete list including Engineering, Clay Testing, Augur Brick Machines, Dies, Granulators, Pug Mills, Cutting Tables, Represses, Rattlers, Dry Pans and Wet Pans, Screens, Elevators and Conveyors, Crushers and Disintegrators, Winding Drums, Clay Cars, Barrows and Trucks, Sewer Pipe Presses, Dry Press Brick Machinery, Roofing Tile Machinery, Clay Refining Machinery, Plunger Brick Machinery, Soft Mud Machinery, Mechanical Brick Setter, Continuous Kiln, Dryers, Dryer Cars and Rotary Dryers.

In the "Introductory," the American Clay Machinery Co., Bucyrus, Ohio, states:

"To the clayworker, this catalogue will be interesting and valuable. It has grown from year to year, until it is at present a veritable encyclopedia of the clay trade. You are invited to examine it carefully and to pass judgment upon its contents. If we can be of service to you, either in the matter of advice, engineering, machinery or appliances, you are invited to write us freely."

Table of Contents

Girl Brickmakers in Great Britain 634
Button-Hole Talks 638
Electric Trucking 639
Burning Clay Wares 640
Building Brick Sizes 641
Strength of Sewer Pipe.... 642
A Matter of Man Power.... 647
The Retail Trade 647
Waste Heat from Continuous Kilns 648
Postal Taxes 649
The Business of Babbitting 649
Brick, the Building Material of the Ages 650
The Automatic Control and Measurement of High Temperatures 652
The Science of Advertising 655
The Relation of the Highway to the City's Welfare 658
Obituary—An Unusual Toll in the Clay Craft 657
A Patriotic Duty 657
Spring Meeting of New England Section A. C. S. 657
Chicago Annexes Indianapolis 659
Drain Tile Plant Wanted in Arkansas 661
Brick for Knoxville Hotel Taken Over by the Government 684
A Vocational Educational Bulletin 686

CORRESPONDENCE:

Orders Now Exceed Quota According to Curtailment 661
Wants The Clay-Worker on File When the War is Over 660
Machine Wanted for Cutting Pumice Stone 660
Business Good in the Stoneware Line 660
Good Suggestion from Arkansas Brick Manufacturer 660
The Smokeless Kiln 660
Cincinnati Brick and Building News 686
Brick News from Southern Indiana 688
Pacific Coast News 692

EDITORIAL:

Current Comment 662
One of the War's Forced Benefits 662
The Fuel Problem 662
Brick Waste and Roofing.. 663
Curtailing the Open Account 663
The Brick Trade 663
Unpatriotic Agitation 663
The Silo Business 663
A School for Managers 663
Turnover and Profit 680
Editorial Notes and Clippings 683

MISCELLANY:

Westinghouse Employes Raise Two Million for Liberty 639
Trucks as Selling Agents... 641
The Labor Situation 647
The Tractor on the Farm.. 649
The Poor Unfortunate 652
The Book of Smiles 680
Clayworking Machinery 680

INDEX TO ADVERTISEMENTS ON PAGE 693.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

required by the act of Congress of August 24, 1912, of THE CLAY-WORKER, published monthly at Indianapolis, Ind., for April 1, 1918.

State of Indiana, County of Marion, ss:

Before me, a notary public in and for the state and county aforesaid, personally appeared T. A. Randall, who, having been duly sworn according to law, deposes and says that he is the editor and business manager of The Clay-Worker, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

That the names and addresses of the publisher, editor, managing editor and business managers are:

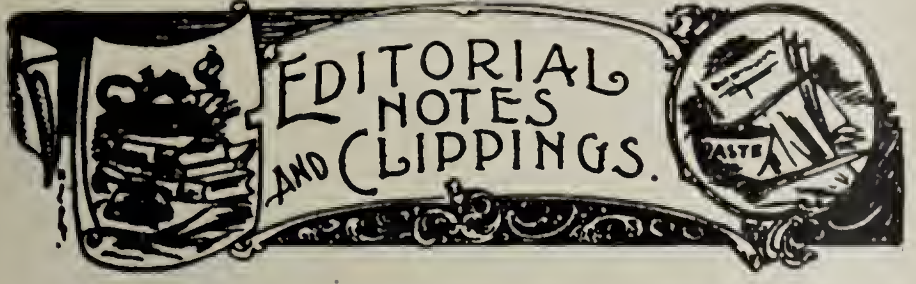
Publisher, T. A. Randall & Co., Inc., Indianapolis, Ind.
Editor, Theo. A. Randall & Indianapolis, Ind.
Managing Editor, Theo A. Randall, Indianapolis, Ind.
Business manager, Theo A. Randall, Indianapolis, Ind.
Owners are T. A. Randall & Co., Inc., Indianapolis, Ind.; Theo A. Randall, James E. Randall and Denton F. Billingsley, Indianapolis, Ind.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

That the two paragraphs next above, giving the names of the owners, stockholders, security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) Theo. A. Randall, Editor.

Sworn to and subscribed before me this 28th day of March, 1918. (Signed) WALTER P. HANNA, Notary Public.
[Seal] My commission expires April 4, 1920.



EDITORIAL NOTES AND CLIPPINGS.

The old Rogers clay plant at Lisbon, Ohio, was sold recently to J. P. Windsor of Pittsburg, who will put the plant in operation again.

George W. Shaw, J. A. Weaver and George Miller have incorporated the Superior Brick & Tile Co., of Snohomish, Wash., with $25,000 capital stock.

The Lamar Brick & Tile Company's plant at Lamar, Col., was totally destroyed by fire, causing a loss of $12,000. The factory had not been in operation for some time.

Adonis P. and Charles Schenbelen and Walter E. Bryant have incorporated the Plaquemine Brick Yard Co., at Piaquemine, La. They are in the market for heavy brickmaking machinery.

The Ogdensburg Brick & Sand Company of Ogdensburg, N. Y., has been incorporated by E. J. Earle and others. It is the purpose of the company to develop an immense deposit of sand and clay.

The Ashland Coal and Fire Clay Company has been incorporated by Charles and Samuel Smith and Edward Fannin.

Peter E. Bartlett of Miami, Fla., is in the market for some second hand brick machinery.

The Elk Mountain Brick Company of Ashville, N. C., was incorporated recently with $50,000, and has taken over the Grace Brick Works. George C. Shehan is president, J. W. Wolfe, vice-president and Guy Weaver, secretary of the concern.

The Manatee River Pottery Company of Bradentown, Fla., has been incorporated with $10,000 capital to establish a pottery for the manufacture of articles from plastic clay from the deposits along the Manatee River. H. S. Glazier is president, and S. A. Bean, Secretary of the concern.

Harold S. Maddock, formerly vice-president of the Thomas Maddock Sons Pottery Co., of Trenton, N. J., who enlisted in the army with a goodly number of the pottery employes last year, and took up his duties as a private with the rest of the boys, has been granted a commission as Second Lieutenant, and is now stationed at Camp Dix.

The dyke surrounding the south excavation pit of the A. P. Green Fire Brick Company, Mexico, Mo., was broken by the overflow of a creek which flows near the hole, due to a cloudburst which filled the stream to overflowing, and the embankment gave way under the heavy water pressure. Scores of men worked all night to reinforce the walls. The water surrounded a steam shovel to a height of five or six feet, and several cars were put out of commission.

In common with nearly all clayworkers who are doing their share along patriotic lines, a number of brick men in various parts of the country aided in the Third Liberty Loan campaign, by helping defray the expense of advertisments in the daily papers boosting the loan. Among those who sent in copies of such ads are Warren DeRosay of the Corry Brick & Tile Company, Corry, Pa., and who is Fuel Administrator for his district, and the Cannelton Sewer Pipe Company, Cannelton, Ind., and the U. S. Brick Company, Tell City, Ind.

W. E. Dunwody, of the Standard Brick Company, and third vice-president of the N. B. M. A., was director of sales in Macon, Ga., for the Third Liberty Loan. He put into the Liberty Loan drive the same energy he devotes to his brick business, with the result that Macon led in the cities of Georgia over and above the quota. Mr. Dunwody thinks when the total figures are finally closed up, it will be found that Macon will exceed 142 per cent. Mr. Dunwody is a firm believer in the old adage that "What is worth doing at all is worth doing well."

The Michigan Face Brick Company of Grand Rapids, Mich., has booked an order for face brick for six oil stations being built by the Standard Oil Co.

C. T. Skoog, 554 Jordan street, Shreveport, La., writes that he is in the market for a stiff mud brick machine of 30,000 daily capacity, to be operated with a 24 horse power engine.

The dryer of the Colburn Brick & Tile Company, Zumbrota, Minn., which was damaged by fire recently, has been rebuilt, and a motor installed to replace the one in the fan which was damaged.

William H. Crume, receiver of the Trimble Brick Company, Dayton, Ohio, has been granted authority to sell the paving brick plants of the company located at Trimble and Glouster. Notice of sale will be found on page 694 of this issue.

The Clay Products Company's plant at Abingdon, Ill., which was not operating to amount to anything during the winter, owing to lack of sufficient fuel, was started again recently and will turn out hollow tile almost exclusively. Roy Lomax is superintendent of the plant.

The Bessemer, Pa., paving brick plant, of the Metropolitan Paving Brick Co., formerly the property of the Bessemer Limestone Co., is working to capacity despite the fact that some of the other units of the concern are working on a basis that makes about 50 per cent. production for the corporation.

The Liberty Sand and Clay Co., of Pittsburgh, Pa., has made application for a charter for the purpose of engaging in the business of quarrying, manufacturing and dealing in stone, sand, clay and articles of commerce produced from stone, sand or clay. The headquarters of the company is 928 Frick Building.

The high school students of Montgomery county, Indiana, have been offered an opportunity to win $10 in prizes by the Standard Brick Company, Crawfordsville, Ind., for the best story on the subject, "The Story in a Brick." $5 is the first prize; second prize $3 and the third prize $2. The story is not to exceed three thousand words.

H. M. Guy, general manager of the Capital City Brick Co., Topeka, Kansas, is optimistic enough to see something favorable in the curtailment order, in that it will release men who have formerly worked on the brickplants of that section for farm work, and farm hands are always in big demand in Kansas all summer. "It's an ill wind that blows nobody good."

Joe A Caldwell and William Eberhart have leased the plant of the Bristol Brick Co., Bristol, Tenn., and will put it in operation. This plant consists of down draft kilns and modern machinery for the manufacture of shale brick. With the expenditure of additional money for equipment this plant will have a capacity of 50,000 brick per day. It is expected that the plant will be enlarged from time to time, with a view to manufacturing vitrified brick, tile and other products from clay.

The Brown Instrument Company, Philadelphia, Pa., recently let a contract for an addition to their factory to cost approximately $50,000. The building will be erected on the land at Wayne and Roberts Avenue, purchased last fall, and the new building will adjoin their present factory. This company is now manufacturing pyrometers used in the heat treatment of munitions for the Government. The Brown Instrument Company which was established in 1860, has an enviable reputation for high grade pyrometers and other heat measuring devices. Richard P. Brown is president, C. Stanley Hurlbut, vice-president, George W. W. Cornman, secretary, and John P. Goheen, assistant treasurer. The company has branch offi-

EDITORIAL NOTES AND CLIPPINGS—Continued.

ces in New York, Pittsburg, Detroit, Chicago, Denver, San Francisco and Los Angeles.

One of the large kiln sheds at the Guignard Brick Company's plant at Columbia, S. C., was partly destroyed by fire of unknown origin.

The brick plant of Boukin & Carlson of Crookston, Minn., which has not been operated for three years, was completely destroyed by fire recently.

The Barbourville Brick Company of Barbourville, Ky., has been incorporated by L. L. Richardson, Hiram Owens and Joe Mitchell, with $40,000 capital stock.

The East Peoria Brick Co., of Peoria, Ill., formerly owned by Kanne Brothers, has been purchased by F. R. Carter, who will operate same in connection with his other plants at Peoria.

At the thirty-seventh annual election of the Building Material Exchange of New York City, Frederick A. Rose of the Greater New York Brick Exchange Company, was elected president.

E. C. Howard, formerly of the Claycraft Brick Company, Columbus, Ohio, has recently been appointed general manager of the Columbus Fire Brick Co., with office in the Hartman Building of that city.

The Bradford Pressed Brick Co., of Bradford, Pa., of which Wm. Hanley is general manager, is at present busy on war orders, and so for the present at least, does not expect to be affected by the fuel curtailment order.

The plant of the Springfield Drain Tile Company, Springfield, Ill., which was destroyed by fire last year, is to be rebuilt. They will manufacture silo block as well as drain tile. W. C. Holmes is business manager of the company.

Henry Colter, for many years superintendent of the fire brick plant of Charles Taylor & Sons, Cincinnati, Ohio, was found dead in the yards of the C. H. & D. Railroad. It is thought he was looking for one of the company's cars when he was run over by a train.

We are in receipt of a letter from P. F. Martinez Van R., Casilla 1246, Valparaiso, Chile, South America, stating that he is going to erect a plant for the manufacture of roofing tile and brick, and would like to receive catalogues and price lists of necessary machinery.

The North Bend Fire Brick Company of Gleason, Pa., at their annual meeting recently, elected the following officers: President, William N. Sleicher, Troy; Vice-president, Frank C. Preston, Cleveland, Ohio; Secretary and Treasurer, George H. Diack, Lockhaven, Penn.; Chairman of Board of Directors, William Sleicher, Troy. These, with Arthur B. Cobden of Gleason, constitute the Board of Directors. A dividend of eight per cent. was declared payable in quarterly amounts of two per cent. William Sleicher has been President of the company a number of years. He declined a re-election and his son was chosen in his place.

The Shenango Pottery Company of New Castle, Pa., was recently awarded a government order for $100,000 worth of tableware to be used in the various training cantonments of the country. This order, together with the one previously received by the concern, the first of this year, makes a total of $500,000 worth of goods ordered from the plant by the government during the present war. In order to care for this business, the company is now having two new kilns erected. The enlargement of the number of kilns was necessary in order to turn out the goods by January 1, 1919, the date called for the complete delivery of all the tableware.

BUILD WITH BRICK

UNITED STATES NOW MANUFACTURING LEAD PENCILS FROM DOMESTIC CLAYS.

Lead pencils are now manufactured in the United States almost exclusively from clay mined in Middlesex county, New Jersey, according to a statement given publicity by Henry B. K. Kummel, state geologist, who remarks that this Nation, prior to the war, depended almost entirely upon German clay for lead pencils.

Mr. Kummel's report emphasizes the importance of a Middlesex product that has been largely overlooked in the state's industrial reports, but which is rapidly forging to the front through the enterprise of a few wide-awake individuals.

BRICK FOR KNOXVILLE HOTEL TAKEN OVER BY THE GOVERNMENT.

An unusual condition prevails at Knoxville, Tenn., where confiscation by the Government of all brick required in the erection of the Farragut Hotel now under construction in that city, will likely prevent the contractors from completing the building by September 1, as stipulated in the contract. According to the contractor, the brick to be used for the outer walls on the hotel had been made in Chattanooga and stored pending shipment, when Government agents confiscated the entire lot and sent the bricks to Alabama to erect buildings essential for government work.

The brick company was also required to furnish bricks to the Government until two weeks ago when a new consignment was started for the Farragut Hotel and two carloads of the brick are now on their way to Knoxville.

Eighty per cent. of the concrete has been placed, and the contractors are now working on the fifth floor. The tile for the flooring is on the site, but there is not sufficient material at hand for the walls. This tile for the side walls can be secured when wanted however.

The hotel will be nine stories in height and finished with rough texture brick. Much of the material to be used in the construction of the hotel was made and stored months ago, some of which has been taken for government use, making it necessary for some of the materials to be remade.

ALONE.

(Copyright, 1917, by Edgar A. Guest.)

Strange thoughts come to the man alone;
'Tis then, if ever, he talks with God,
And views himself as a single clod
In the soil of life where the souls are grown;
'Tis then he questions the why and where;
The start and end of his years and days,
And what is blame and what is praise,
And what is ugly and what is fair.

When a man has drawn from the busy throng
To the sweet retreat of the silent hours,
Low voices whisper of higher powers.
He catches the strain of some far off song,
And the sham fades out and his eyes can see,
Not the man he is in the day's hot strife
And the greed and grind of a selfish life,
But the soul of the man he is to be.

He feels the throbbing of life divine,
And catches a glimpse of the greater plan;
He questions the purpose and work of man;
In the hours of silence his mind grows fine;
He seeks to learn what is kept unknown;
He turns from self and its garb of clay
And dwells on the soul and the higher way.
Strange thoughts come when a man's alone.

Announcement

We Are Now Prepared to Apply Producer Gas to Your Periodical Kilns.

Being the Pioneers in Applying Producer Gas to Dryers and Continuous Kilns—

With Producers That Have Shown 89.8% Efficiency in Actual Test—

With Hundreds of Producers in Successful Operation on Clay Plants—

Who Can Give You Better Service?

WRITE TODAY

International Clay Machinery Co.

Dayton, Ohio, U. S. A.

Written for The Clay-Worker.

CINCINNATI BRICK AND BUILDING NEWS.

WHILE THERE has been a lull in the building operations here for some time, due to the war, there appears to be a more decided step in the direction of activity now, and the number of building prospects and projects under way indicates that at least there will be a fair amount of construction work undertaken this spring. This is true of the builders of homes, too, and the number of the latter would indicate that there is to be something of a revival to the industry that will be a help of the profitable kind.

The brick and allied clay men have had a hard winter and spring to face, and still they have been loyal and patriotic, and there is much to be said in their favor in this way. They have helped in the Liberty Loan campaign, and as Cincinnati has again made a notable record in this way, have every reason to feel at least a grateful pride in this fact. Hamilton county has done a notable work in the matter of helping to win the war, and the last loan has marked up a fine record for this city. This was the second large city to reach its quota, and at the end of the campaign went more than 50 per cent. over the allotment.

From reports given out there will be erected in a prominent downtown section a thirty-five-story building by the Government, to house a number of offices, covering some of the local departments of the Government. The site has been selected, but this has not been given out as yet to the public. It is said that blue prints of the building are in the hands of a Cincinnati architect, and it is stated further that this building will rival anything west of New York in the matter of height. It will also be modern in all respects, comprising the latest and best in this way. It will have four entrances and exits, and there will be arcades wide enough to permit trucks going in the opposite directions. It will house all the railroad offices of the Government, and will, in fact, be one of the big projects in building operations.

The permit for the construction of the south wing of the Dixie Terminal Building, to face Third street, has been given approval by Lieut. Col. Lawrence Beech, Engineer Corps, to whom building plans in the Cincinnati district must be submitted before anything in this way can be undertaken. He has approved of the building as being a public necessity. It will be four stories high, to cost $350,000, and to be of concrete and brick. It will have a frontage on Third street of 139 feet, and will extend 183 feet toward Fourth street. It is the first of the buildings for the Green Line cars from Kentucky towns, to be used as a terminal. H. Harig & Co. have the contract.

The contract for the upper portion of the Palace Theater has been let to the Longacre Construction Co. This will cost about $300,000.

In an effort to seek Government help in boosting the use of face brick, and in likewise giving the bricklayers something to do at this time, some action has been taken by the Face Brick Dealers' Association through its board of trustees, at a recent meeting held in New York. The idea is to ask the Government to use brick in the construction of some of the buildings at the cantonments, and in this way make them of a permanent nature, and at the same time conserve lumber for shipbuilding.

A statement has been issued by President John M. Stoner, of this city, to the Government in this way, that reads:

"Recently, the rule of non-essentials has been made to apply in a measure to clay products with the object of conserving fuel. This has been in line with a general policy restricting the output of building materials of all sorts. The members of our association have a great stock of face brick on hand which represents large investments of labor, capital and fuel.

"We shall urge the Government to build as many structures as possible in a permanent manner, utilizing the stocks of brick on hand throughout the country. If this is done it will release thousands of carpenters, now engaged in the construction of wooden cantonment buildings, and they will be available for work in the shipyards, where the Government is now unable to get a sufficient supply of carpenters. On the other hand, this change in the Government's policy of construction work would give employment to bricklayers, who are idle now, in large numbers, because of the stoppage of ordinary and permanent building construction."

J. N. Taft will build three houses near Main and Buxton avenues, Norwood, of brick. One will cost $4,506, and two others will cost $3,500 each. One of these will be of brick and stucco.

The plant of the Anders Shale Brick Co. has been sold to J. Richmond, representing a syndicate, for the sum of $15,000. Some months ago this company went into bankruptcy, and the new organization will in all likelihood revive the operation of same. It is located at Shadwell street and the C. & C. railroad.

Henry Colter, who was superintendent at the plant of Charles Taylor & Sons Co., manufacturers of fire brick and other clay specialties, was killed by a train at the C., H. & D. railroad yards. It is presumed he was looking for cars of materials for the company.

The Blair Brick Co. has completed the building of a new barge and the reconstruction of others, and is ready to ship building brick. There is not very much doing at this time, however. When the period for activity comes there will be nothing to delay matters.

Business is quiet with the Brick Sales Co., and there has not been much in the way of brick orders for a time. Arthur W. Riggs, of this company, was ill at his home for a few weeks, but is back at his desk again.

The Cincinnati Clay Products and Manufacturing Co. finds the present to be somewhat dull. But the indications are better, and there should be something more active later.

The Moores-Coney Co. has been only fairly active in brick lines of late, according to Mr. Jackson, manager of the brick department. W. W. and R. H. Coney, of this company, were among the live Liberty Bond campaign hustlers for the third loan. They did some good work.

The Builders' Brick Co. notes that the situation remains as yet less active than it might be, and there is little of note at this time.

CINCY.

A VOCATIONAL EDUCATION BULLETIN.

Bulletin No. 1 of the Federal Board of Vocational Education is now out and a copy of it should be in the hands of every one interested in promoting trade schools and vocational education.

The purpose of the act creating this board and appropriating government funds for assistance in vocational education is set forth on page 9 of the Bulletin and reads as follows:

"To the extent that it is subsidized by the Federal Government under the Smith-Hughes Act, vocational training must be vocational training for the common, wage-earning employments. It may be given to boys and girls who, having selected a vocation, desire preparation for entering it as trained wage earners; to boys and girls who, having already taken up a wage-earning employment, seek greater efficiency in that employment; or to wage earners established in their trade or occupation; who wish, through the increase in their efficiency and wage-earning capacity, to advance to positions of responsibility. No academic studies can be supported out of Smith-Hughes money."

Those who are interested in the subject and desire a copy of the Bulletin or further information should address their communications to the Federal Board for Vocational Education, Washington, D. C.

THE

UNDERWOOD PRODUCER GAS BURNING SYSTEM

(PATENTED)

Burns Every Kind of Ceramic Materials

Electrical Porcelain, Architectural Terra Cotta,
Paving, Building and Face Brick,
Drain Tile, Holloware, Roof Tile, Etc.

And does it Economically and Successfully.

It conserves fuel in a large measure; does likewise with labor. It is the only logical system to install where the natural gas supply has failed or has been materially diminished or where prices make its use prohibitive.

Then again our Uncle Sam wants you to burn just as little coal as you can. With the Underwood System you can carry out his wishes because you cut down your fuel requirements from 25 to 50 per cent. Yet you are able to produce your normal output. So this reduction in your fuel consumption does not diminish your production but does cut production costs and we hazard a guess that that is what you want. Have you ever thought of this?

It won't cost you a cent to have placed before you in clear, concise, understandable English, all of our facts and data, together with the convincing proofs of some who have eaten of the pudding.

The Manufacturers Equipment Co.
Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-Working Machinery.

PERRY & DUKE,
Canadian Representatives,
841 College St.,
Toronto, Ont., Canada.

Written for The Clay-Worker.

BRICK NEWS FROM SOUTHERN INDIANA.

THERE HAS BEEN little or no change in the trade situation with the brick manufacturers at Evansville and other southern Indiana points during the past few weeks. The general opinion of manufacturers is that there will be little building during the coming summer and fall compared to other years, yet they expect to keep reasonably busy. Some of the brick factories are working on part time, many of the manufacturers reporting considerable stocks on hand. The labor situation is expected to play an important part with them before the close of the present year. In fact, many of the manufacturers for several weeks past have been complaining that they are handicapped by the shortage of labor, and as more men are called by the draft from time to time, it is expected that the situation will become more acute. Evansville and Vanderburg county have sent in the neighborhood of one thousand men to the training camps since last fall, and this number will have been doubled by the end of the present year. Not alone brick manufacturers, but owners of other factories and the farmers in southern Indiana are feeling the effect of the labor shortage. Since the going into effect of the state-wide prohibition law in Indiana many of the men who had been employed in the two breweries and three hundred saloons in that city have found employment on the farms in southern Indiana, and this has been some help to the farmers. There is some building now going on in Evansville, but it is considerably less than that of last year and the year before. Work is being pushed on the new junior high school building in Evansville. Few residences, however, are being built in that city this year, and the building permits for the last few weeks show a falling off over previous years. The Standard Brick Manufacturing Co. at Evansville has furnished the brick for the garage of the Keck-Gonnerman Machine Co. at Mt. Vernon, Ind. The new brick school building at Boonville, Ind., is almost completed. The contract has been let for a new brick orphans' asylum at Carmi, Ill., a few miles west of Evansville. This will be one of several buildings of this kind that will be built at Carmi and in White county. The contract was let a few days ago for the new high and grade school at Lynnville, Ind. The structure will be constructed of brick and will be completed some time before the opening of school this fall. It is expected the contract will be let in a short time for the building of a new brick school building in Center township in Vanderburg county. The township trustee of Jefferson township, Pike county, will erect two new brick school buildings this summer. One will be built at Otwell to be used as a high school and will cost in the neighborhood of $20,000. John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, said the other day that he is looking for no boom in trade for the brick manufacturers in that section until after the close of the world war. Mr. Andres says while there will be more or less building, that it will be greatly curtailed under that of other years.

The Huntingburg Dry Pressed Brick Co. at Huntingburg, Ind., is improving its plant with a producer gas system, which will make it possible to burn a kiln of brick in four or five days, about one-half of the time consumed in the old way. It is said under the new system the brick will be much better and will have a better appearance. Business with the Huntingburg Pressed Brick Co. has been very good during the past few months, in spite of war conditions. The other brick factory at Huntingburg is also doing a very nice business now.

Public improvements in southern Indiana cities and towns have been stopped in some instances in view with the recent suggestion of the State Council of Defense. A few days ago Benjamin Bosse, mayor of Evansville, ordered the Board of Public Works not to start on any new public improvements, but to finish all work that has been started. No new work of any character in Evansville will be started until after the close of the war. This will mean that a large number of street workers and workmen in other lines will be forced to seek other kinds of employment. It had been expected that several new streets would be constructed in Evansville this season, some of them of brick; but the new order of Mayor Bosse will stop all of this. It is expected that practically all road building in southern Indiana will stop also. The commissioners of Vanderburg county, in which Evansville is located, have decided that all road building will stop while the war is going on. Other boards of county commissioners all over the state are taking similar steps. This will mean that plans for certain improved highways, like the Cincinnati-Evansville Highway, passing through West Baden, and the Dixie Bee Line Highway, running from Danville, Ill., to Adams, Tenn., will be postponed for the time being. Mayor Bosse, of Evansville, is the president of the Dixie Bee Line Highway Association, and several links in this road already have been constructed. It is expected that the contract of building the brick streets at Grayville, Ill., a few miles west of Evansville, will be finished. This work started last fall, but during the severe weather of last winter the work was halted. A report from Owensboro, Ky., says that several brick houses have been started in that city. It is expected that all work started will be finished in spite of war orders. Kleymeyer & Klutey, of Henderson, Ky., have been shipping nice orders of brick to Owensboro during the past few weeks.

The stockholders of the U. S. Brick Co. at Tell City, Ind., met a few days ago and elected the following officers to serve the company for the ensuing year: Nick Goffinet, Charles F. Herrmann and Peter J. Herrmann. The company has been doing a very nice business for some time past.

Work on the plant of the Stevens Brick Co. at Evansville, that will manufacture brick from cinders through a patented process, is progressing nicely. The plant is expected to be in operation by the first of June or the first of July, and after the Evansville plant is in full operation the company plans to erect similar plants at Chicago, Milwaukee, Cleveland and other cities.

Henry Clements, former mayor of Cannelton, Ind. and manager of the Cannelton Sewer Pipe Co. at Cannelton, Ind., was a business visitor at Evansville, Ind., a few days ago. Mr. Clements is county fuel administrator of Perry county, and he expects to be extremely busy with his government duties during the coming fall and winter months. He is advising people to lay in their winter's supply of coal.

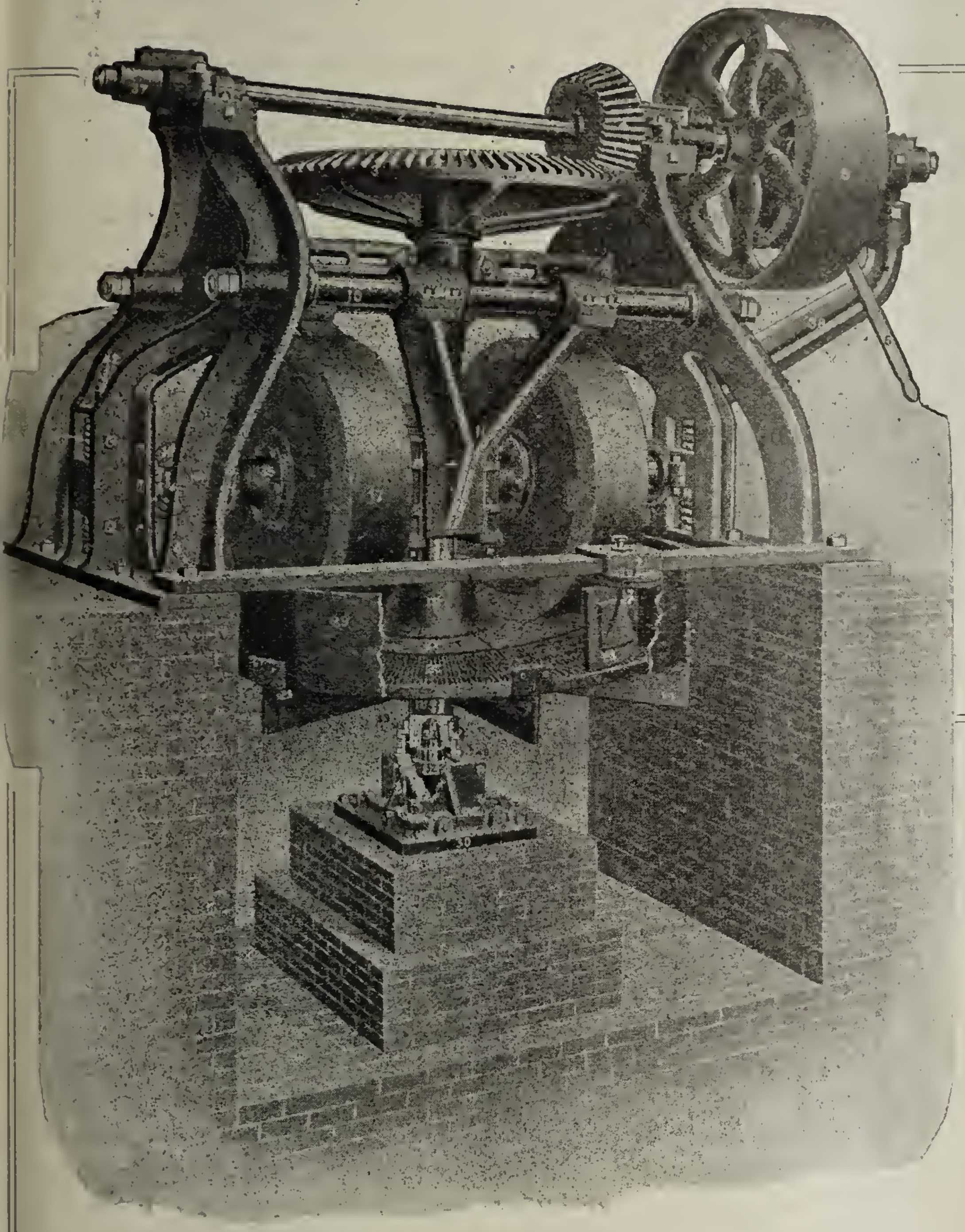
The various potteries at Evansville, Ind., have been operated on full time for the past several weeks, and business with all the concerns in that city has been good. The factories have been more or less handicapped by the car shortage, but they are "plugging away," and it is expected the volume of business done by the Evansville potteries this year will be as large as that of last year.

A HOOSIER.

E. M. DAVIS BECOMES MANAGER.

E. M. Davis was elected the new manager of the Pacific Tile and Terra Cotta Company's plant at Tropico, Cal. Mr. Davis is the son-in-law of Lycurgus Lindsay, owner of the plant. He has been actively connected with the plant during the last ten years, although he has spent the greater part of the last two years in developing his large ranch in the Imperial Valley. For the present the clay products part of the plant will be devoted exclusively to sewer pipe. The talc grinding department is being enlarged to meet a heavy demand for ground talc, created by conditions resulting from the war. A battery of large redwood tanks has also been installed, and the company intends to engage extensively in the manufacture of chemicals.

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.

"They have chosen the sword, by the sword shall they perish."

Thus has America sounded the doom of autocracy.

It must not fall to the boys in blue and khaki to do autocracy to the death unaided.

You are called to get behind our armed forces with the necessary material and supplies.

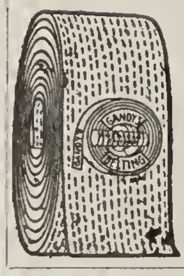
"On-the-Job" ***Gandy*** comes to your assistance with a transmission belt that gets ***all the pull from the pulley.***

For maximum service and maximum economy the ***Gandy*** stitched cotton duck belt is without a peer.

Order today from your Mill Supply House, or home plant direct.

We are prepared to give you quick delivery of seasoned Belting.

Look for the painted green edge and ***Gandy*** trademark.



The Gandy Belting Co.

749 West Pratt Street
BALTIMORE, MD.
New York Branch, 36 Warren St.

AUTOMATIC CONTROL OF HIGH TEMPERATURE.

(Continued from page 655.)

Naturally, this instrument is equally as suitable for automatic temperature control as the instruments previous described when properly designed for this service.

Automatic Temperature Control.

Attempts have been made in the past to electrically operate switches and valves by permitting the pointer on the pyrometer to come in contact with adjustable contact arms on each side of the pointer. Unfortunately, the milli-voltmeter, used with the thermo-electric pyrometer, has an exceedingly weak control for the pointer. One is easily able to blow the pointer across the scale with the breath.

In consequence, simply permitting the pointer of such a pyrometer to move into contact, is not sufficiently positive to be satisfactory for automatic control work.

The automatic control pyrometer exhibited here operates in the following manner: A thermo-couple formed of a nickel chromium alloy is installed in the electric furnace, the temperature of which is being controlled. The thermo-couple actuates a high resistance milli-voltmeter. Below the pointer and adjustable throughout the whole scale ranges, is a table carrying two contact pieces, separated by a thin piece of insulating material 1-32 in. thick. The depressor arm, driven by a small electric motor, or by a clock if preferred, depresses the pointer at regular intervals, usually every ten seconds, and in doing so the pointer forces together the two contact pieces below.

Let us assume the pyrometer controller is required to control the furnace at a temperature of exactly 1400 deg. F. The knob on the left of the instrument is turned until the index in front of the scale stands at 1400 deg. F. This index corresponds to the position of the thin insulating material which separates the high and low contact.

The switch connecting the furnace in the line is closed, and the pointer slowly rises across the scale as the temperature of the furnace rises. As the switch is already closed, when the pointer is depressed on the low contact the switch continues to remain closed, and no change occurs until the pointer passes over the neutral insulating piece and is depressed on the high contact. The switch, indirectly operated by a solenoid and relay, is now instantly actuated and the circuit opened. The temperature of the furnace begins to slowly fall, and when the pointer is again depressed on the low contact, the circuit is again closed. This operation continues as long as the furnace is to be operated.

When the switch opens and closes the main circuit, the current in consequence is either full on or off, and the fluctuations are continuous within narrow limits of some 10 deg. F. to 20 deg. F. These continuous risings and fallings of temperature can be largely reduced and closer control can be procured by the use of two rheostats in the furnace line. The solenoid operated automatic switch is then used to simply cut in and out of circuit the second rheostat.

Assuming it is desirable to continually maintain 1400 deg. F. in the electric furnace, irrespective of fluctuations of voltage, the two rheostats are set so that with only one rheostat in the circuit the temperature will rise to approximately 1500 deg. F. With the second rheostat in the circuit the temperature drops to 1300 deg. F.

When we now use the solenoid operated switch to cut in and out the second rheostat, we naturally control the temperature only between 1500 deg. F. and 1300 deg. F., and we do not have the rapid surges or ups and downs in temperature, and maximum control is secured.

It is realized that the same form of switch can be used to operate a valve to control a gas or oil furnace. We have found it desirable to use an automatic valve in a by-pass so as to simply control a portion of the gas or oil supply, and in the same manner as in the electric furnace control, eliminate the maximum fluctuations caused by the complete opening and closing of the switch or valve.

Assuming that we have a 2-in. supply pipe for the gas to the furnace, it is customary for us to by-pass this and use a ½-in. automatic valve, which gives us approximately 25 per cent. control. This is sufficient to control the usual fluctuations in gas supply, and secure very satisfactory control. This method also eliminates the difficulty which would occur where the gas is completely shut off and then turned in full, as would occur without the by-pass control.

Temperature Signalling Pyrometer.

In addition to an instrument to automatically control furnace temperatures, there has been a demand for an instrument to automatically signal by lights whether the temperature is too high, correct, or too low in any particular furnace.

It has been common practice in plants in the United States, where there are a number of heat treating furnaces, to maintain an operator at a central pyrometer, and by colored electric lights at the furnace, to signal whether the temperatures are right or not. It is common practice to locate three lights above each furnace, red, white and green; the red light burns when the temperature is too low; the white light when the temperature is within certain limits—for example, 20 deg. F. of the correct temperature—and the green light burns when temperature is too high. The fireman who operates the furnace is guided entirely by the lights and a central pyrometer is used to control the temperatures.

We have been able to develop an instrument to automatically signal whether the temperature is correct or not by lights, and in this way the services of the operator at the instrument are eliminated. The same form of instrument is used for this purpose as we use to automatically control the furnace temperatures, and the pointer is depressed at intervals of every ten seconds on to contacts corresponding to the red, white and green lights.

No special battery or other source of current than an ordinary service line is required to operate these lights. The supply may be 110 or 220 volts, either A. C. or D. C. The current which lights the lamps does not flow through the instrument, but is made and broken by an auxiliary device containing the necessary mechanism. A high resistor is in series with the circuit connected with the Pyrometer, which reduces the current flowing through the contractors within the instrument to less than .07 ampere. This prevents sparking at the contactors and errors due to the heating effect of a current of higher amperage. The lamps may be any reasonable distance from the pyrometers; in fact, they are operative at a mile or more if desired.

The various thermo-couples in each furnace are connected successively to the instrument through switching mechanism and at the same time the switching mechanism connects the various sets of lights at each furnace. We have constructed an instrument of this character to automatically take care of signal lights at twelve furnaces.

This form of equipment gives the fireman or operator of the furnace an indication by lights which he can easily understand, and he adjusts the valves or fires the furnace accordingly. It is a simple method to instruct a man to keep the white lights burning and to explain what the red and green lights mean, and a less experienced workman can control the furnaces in this manner than where one is required who can read temperatures on a Pyrometer scale. This newly developed instrument also eliminates the man to read the temperatures at the central pyrometer.

(Continued on page 692.)

Browns Will Not Let Men Sleep On the Job

They Boost Good Ware to Around 90%

IF you could watch over your plant 24 hours of every day, it's a safe bet that things would be run right. But you can't.

There is one thing, however, that shows how your plant is running—that's the kiln temperatures. If your men sleep a few hours on a cold, rainy night, or doze off in the warm sunshine of a summer day, it always shows up in coal waste and a poor burn.

It's easy even for your most conscientious burner to get into the nap-habit, but it's expensive for you. Stop these leaks in your profits. Put Brown Pyrometers on your kilns and let them check kiln operation.

Brown Pyrometers are used now by 80 per cent. of all brick plants in this country using Pyrometers. Test out a Brown equipment in your plant at our expense. Find out how.

Write to The Brown Instrument Co., Philadelphia, for full details or one of their branch offices in New York, Pittsburgh, Detroit or Chicago.

Brown Pyrometers

AUTOMATIC CONTROL OF HIGH TEMPERATURE.

(Continued from page 655)

The extensive use of Pyrometers to measure or record high temperatures will serve to

First. Eliminate guesswork as to the temperature.

Second. Reduce fuel consumption through the maintenance of the correct temperature and not excessively high temperatures.

Third. Reduce time for heating of the product due to the maintenance of the correct temperature.

Fourth. Increase efficiency in operating a plant through the savings outlined above.

Instruments to automatically control the temperature, when properly constructed and applied, will eliminate entirely the personal element. The maintenance of the correct temperature in the furnace is automatic, and this is one step further, and in consequence an improvement over temperature control through pyrometers.

I do not doubt but that the next few years will see further improvements in pyrometers and temperature control. There will always be room for improvement, and the co-operation of the industrial works and the pyrometer manufacturers will largely hasten the development of practical instruments for the measurement and control of high temperatures.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

The REMARKABLE WINTER and spring weather which visited this city and vicinity this year has been a big help to the building industries, particularly the manufacturers of brick and other clay products. The lack of suitable houses for the steadily incoming stream of workmen in the shipbuilding and mining districts of this part of the country has created quite a demand for brick of the cheaper grade. Reports of the current transactions of the clay industry, both in the city and country, as negotiated in the offices of San Francisco, give evidence of sound market conditions in the face of influences which some authorities say should have quieting effects on business. For some weeks past the orders for brick, both enamel and fire, have been coming in in good volume. It cannot be denied, however, that the manufacturers of all clay products in California, as well as in other parts of the United States, were hard hit by the recent regulation of the Fuel Administration, limiting their production to 50 per cent. of last year; but no one is complaining, since all agree that it is better to invest in victory than in all the brick plants in the world.

About 50 per cent. of the time ordinarily devoted to business interests has, during the past several weeks, been turned over unbegrudgingly to the Liberty Loan drive, and the results which this, the final week of the campaign, shows are very gratifying to those who have given so much of their time and effort to the work. The final estimates have not yet been turned in, but according to the latest reports the San Francisco district has over-subscribed its quota by about $50,000,000. Several of the large clay companies are proudly floating the 100 per cent. Third Liberty Loan subscription flags, while others have made up for the lack in the numbers of their subscriptions in the amount subscribed. The following men representing the brick and clay industries were on the Committee of One Thousand: W. S. Hoyt, secretary, and S. W. Smith, president of the United Materials Co.; F. A. Costello, president of the California Pottery Co.; A. E. Snell, Remillard Brick Co.; W. W. Dennis, McNear Brick Co., and Eugene Corrigan, Stockton Fire and Enamel Brick Co. Seventy-eight employes of the Stockton Fire and Enamel Brick Co. subscribed to the amount of $7,000 worth of bonds. This sum represents an increase of 50 per cent. over the plant's subscription to the Second Liberty Loan. The management hopes to increase the subscription before the present campaign ends.

W. W. Dennis, manager of the Ione Fire Brick Co., offices in the Monadnock Building, reports that at present labor is not hard to secure, and has not yet caused the manufacturers any great concern. He says that much of the labor used in brick industries is not applicable for ship industries. "We look for our men to become restless as the need for their services becomes more imperative, when all yards are running full blast," he said. "If we can maintain the price of $11 a thousand, now in existence, brick companies in this district should enjoy a fair year. No one can look ahead more than three months, but the outlook at present is not as bad as it was in January. We trust that there will be enough business created from day to day to carry us through the year, enabling us to sell a normal, or nearly normal, quantity of brick."

The Allied Unions Brick Co., which has been organized at Oakland, Cal., and which has opened offices at 318 First National Bank Building, Oakland, has begun operations at its plant at Richmond, Cal., under the direction of E. E. Dooley, general manager. The company's clay and shale deposits are so situated that the material can be brought to the plant by gravity, at low cost. Plans are now under way to add machinery for making hollow tile.

The Standard Magnesite Co. of California, with offices in San Francisco, has issued 2,500 shares of its capital stock, par value, to Henry C. Hake and Virgil M. Price. The company has mining claims in Santa Clara and Stanislaus counties.

Gladding, McBean & Co. report that business is running along about as usual at their plant. The bigger portion of their sewer pipe production is being used in the construction of powder factories, cantonments and acid-making plants. Brick and other clay products are also being used indirectly by the works which supply powder.

G. D. Clark, of N. Clark & Sons, was elected one of the directors in the newly organized State Association of Manufacturers. The organization was undertaken by the Oakland Chamber of Commerce, following a conference of the leading California manufacturers, held at the Hotel Oakland last week. The objects of the organization are: To further and protect the interests of the manufacturers of California, and to develop relations and facilities for the interchange of ideas and for the promotion of industry.

Walter R. Simon, president of the Simons Brick Co., Los Angeles, Cal., was elected first vice-president of the Building Industries Association of Los Angeles at a recent meeting. Among those elected to the board of directors were W. E. Stradley, interested in burned clay products, and W. R. Simons.

Bonds amounting to $240,000 for a sewer system were recently voted at Globe, Ariz. At the same time the voters rejected, by a narrow margin, bonds amounting to $200,000 for enlarging the water supply. Steps will be taken at once to sell the sewer bonds and start the construction of the sanitary sewer.

SUNSET.

In No Hurry to Fly.—"John, you ought to get in the aviation service," a York man told a negro last week. "You are a good mechanic and would come in handy in an aeroplane. How would you like to fly among the clouds a mile high and drop a few bombs down on the Germans?"

"I ain't in no special hurry to fly, Cap," the negro answered. "When wese up 'bout a mile high, s'pose de engine stopped and de white man told me to git out an' crank?"—York Times.

It is a whole lot easier to advise the curtailment of luxuries than it is to draw a dividing line between luxuries and necessities.

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. LXIX. INDIANAPOLIS, IND., JUNE, 1918. No. 6.

HOW CLAY PRODUCTS CAN WIN THE WAR

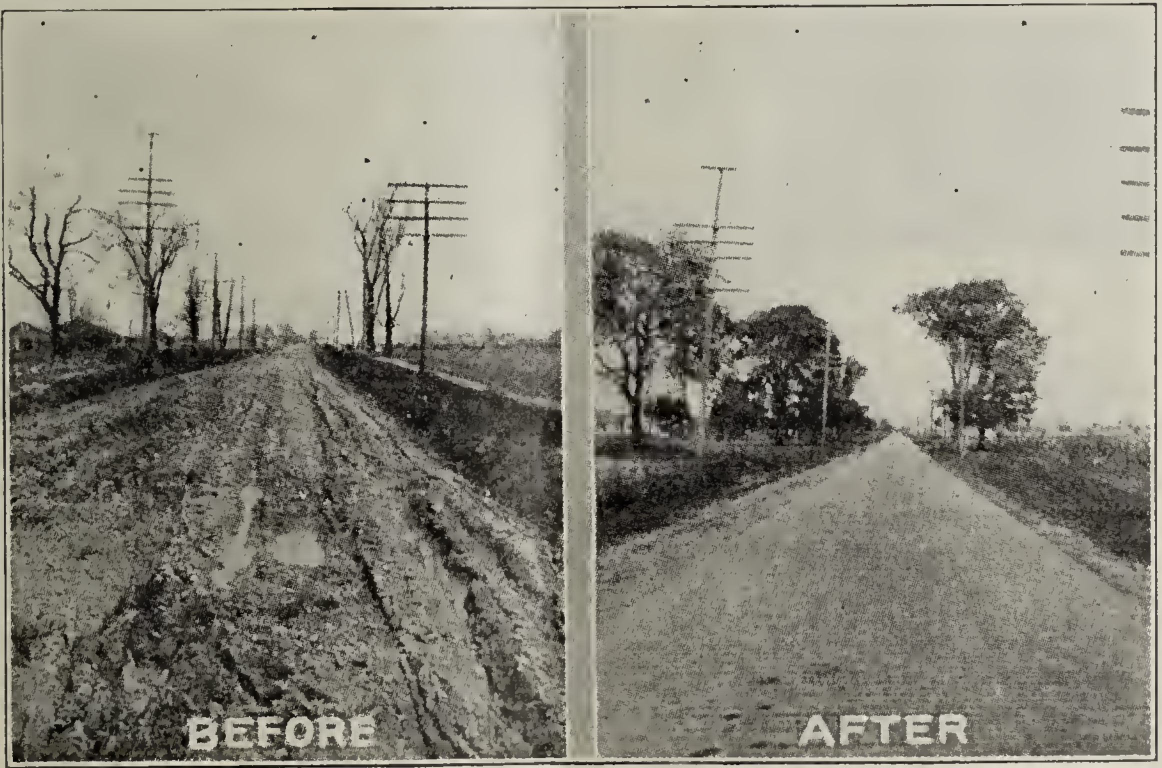
Facts Relative to the Uses of Clay Products and Economic Methods that Should Be in Practice in the Industry During the War.

By Cleve Hartzell.

IT IS NOT NECESSARY to go into a lengthy dissertation concerning the war, but it is our patriotic duty as clay-workers not only to think of business activities, but to produce wares that will lead in the direction of winning the war. Reduce unnecessary waste of fuel, labor and power transmission; practice economical methods of drying, burning and handling of the wares. These are the greatest factors confronting the clay manufacturers during the war, and will give us lessons in economy for the future.

Now is the time to install waste heating systems for heating dryers, clay storage sheds, etc. Cut out such unnecessary fuel problems; construct viaducts for fast and low cost of unloading coal and clay. Promptness of loading and unloading railroad cars means much to rail transportation. Each man saved at the plant means one for the front or the harvest fields.

It is not really an item of running to capacity, but to produce goods that will help win the war. Have you ever thought of the numerous things clay products can do in this direction?



Vitrified Brick Paved Highways Will Help Win the War.

"Brick Paved Highways Essential for Transportation," Both in America and Europe.

A great campaign will soon be in progress for better highways. The transportation problems in America confronting the nation are more serious than ever before. Realizing the inability of the railroads to handle freight, which is so badly needed at this time, in sections of the country where there are paved roads, motor trucks have done their share in moving freight, which otherwise would have been at a standstill.

In the course of the next few months the railroads cannot give adequate services. When our great army is "Over There,'' food, clothes and equipment for the vast army will strain shipping facilities of the railroads and waterways beyond their capacity. In the writer's estimation, motor truck services will be the swiftest way to overcome this strain. Railroads must have good roadbeds and rails. Motor trucks must have good highways. A fair example in this direction is the improvement of the Lincoln Highway for heavy motor traffic. Just think of the agricultural resources that could be handled over this route.

Since the War Industries Board has restricted the use of freight cars for the transportation of road-building material, it will mean motor trucks to distribute this material for road improvements. The same can also be applied to the transportation of farm drain tile and building material. During the war it will be surprising the amount of clay wares that will be delivered in this way.

When heavy motor trucks are in actual work on the battlefields, one great disadvantage is bad roads. The "tanks" are the best built machines to get over rough roads; in fact, they are the only ones that can get over many places. So it is evident that roads must be made before the armies can get their heavy transports and big guns to the front.

Paving brick manufacturers should be alert in this time of need, for good roads "over there," good transportation behind the firing lines, means much to sustain our country's military supremacy.

It is needless to go into details why the main roads there should be paved, but just imagine the heavy transports or big guns going over some of the mud roads in the States, and the ccomparison of the paved roads. It is not a question of shipping paving brick to Europe, but a question of manufacturing them here.

The Author, Cleve Hartzell.

Sanitary Sewers Will Guard Health at U. S. Army Camps.

It will be remembered during the Spanish-American war, loss of life by sickness during that war exceeded the loss of life in actual battle. Uncle Sam has spared neither time nor money to make the sanitary condition for the Government cantonments the very best by installing sanitary salt-glazed clay sewers. The sewers for these systems have kept many clay plants busy the past summer in filling the Government's orders. Uncle Sam has won one great battle by keeping good health of the soldiers at the home camps, but how will they find the sanitary condition in Europe? Change of climate to some is no small item, and if sanitary conditions are not good there will sure be sickness among the troops.

There are great opportunities open to clay products manufacturers to co-operate with the Allied Governments to establish good sewerage systems "over there" at the camps.

How Drain Tile Will Do Their Bit to Win the War.

With the great food shortage, and the heavy demand for all kinds of farm products, it is the farmers' duty to make all land tillable. There are vast amounts of land in many sections of the United States worthless for crops because it needs tiling. It is needless to say what good tiling is to land, for both drainage and irrigation purposes. Subdrainage has been extensively in use even in desert regions. The United States Reclamation Service has found drain tile very valuable in irrigation work, absorbing the surplus water without a means of taking off the water that has been put on.

Never before has the country been in need of all the land as it is now. One great factor in winning the war depends on our agricultural resources. Not only during the war, but after, for Europe will depend on the United States for most of her food products. So it means a larger food production, and this can be increased by using plenty of burnt clay drain tile.

Look back over the past ten years at the vast swamps that were worthless at that time, and are today yielding the best crops. Isn't this convincing that clay tile are a necessity in time of war? Iowa for instance, has profited more from drainage tile than any other source of farm improvements; has produced and used more clay tile than any other state in the Union. Iowans know from experience that drainage has made the success of their crops and yet there are thousands of acres in Northern Iowa and Southern Minnesota yet to be drained. One going through that part of the country in early spring can readily see the great need of farm drainage. This is only one instance; there are many other parts in different states that need drainage just as bad. Our country calls for more food stuffs. Drain the swamps, and drain tile will have an important bearing upon the winning of the war.

Brick and Hollow Block the Permanent Building Material.

Have you ever visited a city that has been swept by fire, cyclone or flood? If you have not, perhaps you have seen pictures of such a stricken city. Isn't it remarkable the difference of the brick and frame structures after such a havoc? In the last score of years our forests have been dwindling away. Some states have very strict laws regarding forest fires, etc. Never in our history has timber been needed more than it is today. Help our Government by saving the timber, for it is needed for building ships and many other things pertaining to the war.

Let me cite you to one instance, or rather one kind of wood, and that is black walnut, which is badly needed at this time for gun stocks. It has not been so many years ago when it was very plentiful, so when you build with brick you are saving our forests.

Have you ever noticed that most government buildings are built with brick and stone? At the present time many buildings are under construction. Note the new Armory Building nearing completion, in one of the engravings in this article; also the Canadian Government believes in building with brick and stone. Note the street scene of the illustrations in this article. Frame buildings are not to be seen. Many bricklayers are wanted in France to build the great aerodomes which house America's great air fleet. Another good evidence of the superiority of clay products.

Clay Plants in Europe, During and After the War.

American capital should be invested in clay manufacturing enterprises in Europe to fulfill the present demands for clay products, for at the close of the war the demand for building material will be so great that the brick yards cannot supply the demand, and it will be the same old story **"Build to Burn."** European clay plants are at a standstill, owing to shortage of help, coal, etc., and many are totally wrecked.

It will mean American enterprises to uphold the clay industries "Over There." I say frankly, NOW is the time to start the ball rolling in the right direction. Prove to the world that clay products are the most sane building material.

Mr. Clay Products Manufacturer, are you going to let this great opportunity pass you by? For the sake of our country and the clay industry, plan to make your plant efficient and economical and get ready for the busy times that will come with the ending of the war.

CLAY MINING PROGRESS.

FROM time to time the Clay-Worker has called attention to the development of clay mining and marketing as a distinct industry separate from, but in connection with clay working. It is interesting to note that development along this line has been materially encouraged by war conditions and that the future in this branch of the industry looks bigger and better.

A recent Press Bulletin of the U. S. Geological Survey says that the shortage in the supply of certain clay of higher grades since the war stopped the importation of these has led the Survey to make a preliminary canvass of the clay mining industry for the year 1917.

A Handsome Brick Structure, The New Armory, Monmouth, Ill

Street Scene in a Prosperous Canadian Town where they Build with Brick.

The information sought was for the principal clay mining in the United States, that is kaolin, paper clay, ball clay and fire clay. The data obtained shows that the clay mining industry is making good progress.

The outstanding features of this survey are shown in the large increase in the quanity of clay marketed, and the still larger increase in its value.

The 1917 production is estimated at 4,301,000 tons valued at $9,285,000, a gain of about 40 per cent. in quantity and 61 per cent. in value as compared with 1916.

Most of this gain was from an increase in the production of fire clay, though every variety of clay participated in it. Moreover, it is contended that there would have been a larger output than that shown had it not been for a shortage of labor, cars, freight embargoes and other hindering influences.

The production of kaolin, which is used principally in making paper, high-grade pottery, and tile, is estimated to have been 34,000 short tons, valued at $330,000, in 1917, a decrease of about 14,000 tons, but an increase of $23,000 in value compared with 1916. This decrease was caused principally by a decline in the production of Maryland. The average price per ton for kaolin in 1917 increased $3.28, or to $9.71. Kaolin was produced almost exclusively in the South, North Carolina reporting more than 50 per cent. of the output and value in 1917.

Paper clay is also largely a product of the South, most of it coming from Georgia and South Carolina. The increase in the ouptut of this variety of clay in 1917 as compared with 1916 was about 10,000 tons, and the increase in value was about $133,000. The average price per ton in 1917 increased 51 cents, or to $5.53. This clay, which is sometimes called secondary, sedimentary, or plastic kaolin, is used principally, as its name indicates, in the manufacture of paper, though it is used also in tile and efforts are being made to make it available for other uses by inexpensive chemical treatment.

Ball clay, another material used in fine wares, made a large gain in 1917 compared with 1916, its output increasing about 55,000 tons and its value increasing nearly $300,000. The average price per ton increased 38 cents, or to $4.74. The principal producer is Tennessee, which reported about one-third of the output and value in 1917.

The tabulated figures of the quantity of different clays mined and marketed during the year show the following:

Kaolin	34,000 tons
Paper clay	163,000 tons
Ball clay	145,000 tons
Fire clay	3,359,000 tons
Other clays	600,000 tons
Total	4,301,000 tons

Fire clay constituted about three-fourths of the quantity and value of all clay marketed in 1917. It also showed the largest increase, gaining more than 1,300,000 tons and $3,000,000. Pennsylvania was the leading state in the production of fire clay, but was second in value; it reported about 30 per cent. of the quantity and 25 per cent. of the value of that marketed. Missouri, owing to the higher prices received for her fire clay, was first in value though second in output.

HOLLOW TILE AS A FACTOR IN FIRE PREVENTION.

By Walter A. Hull.

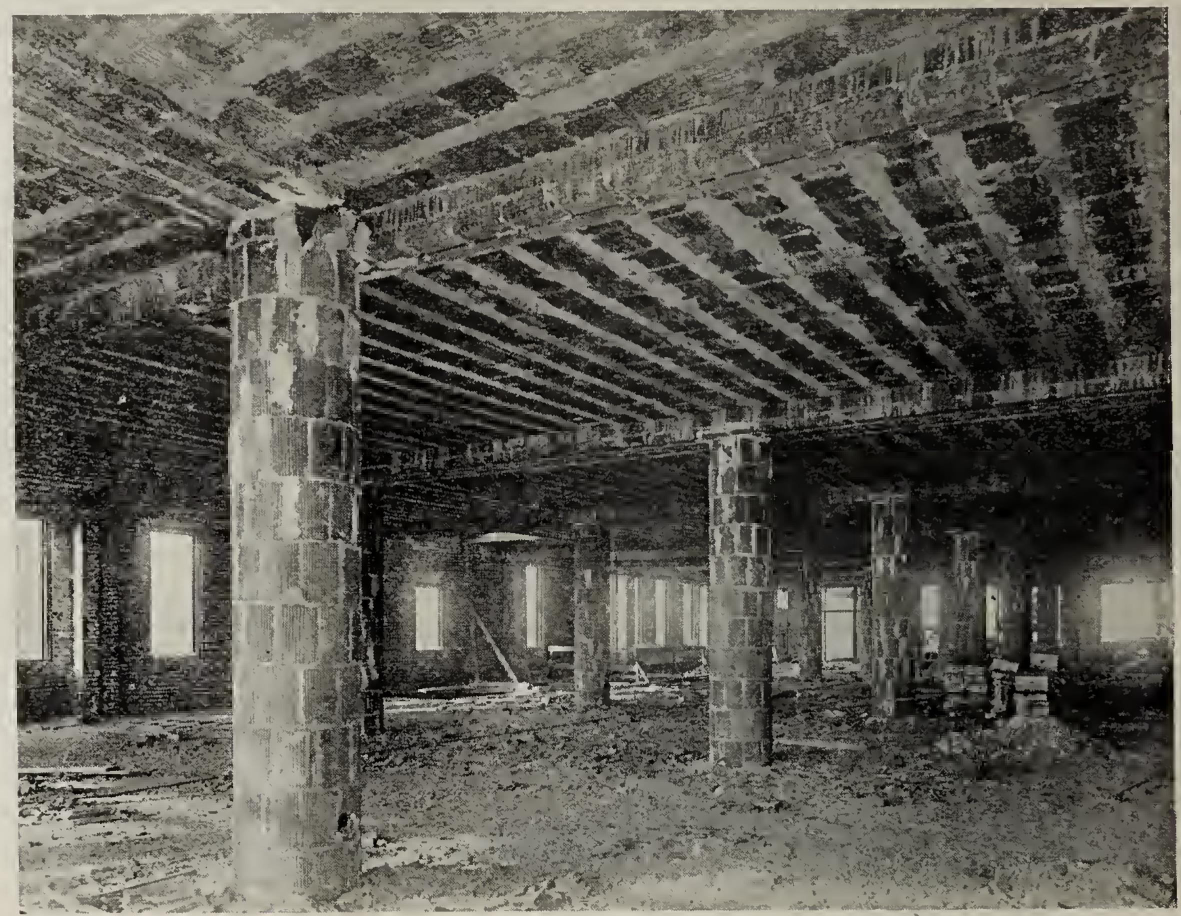
With the Increased Heights of Buildings Made Possible by Steel Frame Construction and the Difficulty of Effective Fire Fighting at Such Heights, Well Burned Clay Products Have Solved the Fire Prevention Problem.

THE DEVELOPMENT OF the American skyskraper ushered in the era of fire resistive construction. Steel frame construction did away with the existing limits to the height of buildings, solving some of the building problems of the times and creating new ones. The new heights, in themselves, introduced difficulties not hitherto thought of; there was a limit above which firemen could not fight fires effectively with hose streams, danger to human occupants was alarmingly increased and the tremendous investments in these monstrous buildings were seen to be undesirable risks from the insurance standpoint. There was one logical, inevitable answer to these difficulties: if buildings were to be built many stories higher than the old brick and timber structures, combustible material must enter as little as possible into their construction.

The old standby as a non-burnable building material was burned clay in the form of brick. Nothing better being available, brick was used, for walls, partitions and even for floor arches, in some of the early skeleton construction buildings. Of course, the objection to the extensive use of brick in this way was the excessive dead load that had to be provided for in the steel work of the building. The obvious remedy was to make burned clay building units hollow instead of solid. There were, at that time, sewer pipe factories that made some hollow building blocks for foundation walls of dwellings and other small buildings. It was but a short step from these blocks to the partition tile and the first hollow floor arch blocks of burned clay.

Without the skyscraper, the development of the hollow tile industry would have been slow and insignificant; without burned clay hollow tile, the earlier growth of the skeleton construction building would unquestionably have been greatly retarded. The development of these two giants, the skyscraper and the hollow tile industry, has wielded an influence in the progress of our attainments in fire-resistive construction which can hardly be over-estimated. The tall building, introducing, as it did, new hazards and new problems in building to prevent as well as to withstand fire, stimulated activity in the direction of better design. The necessity brought forth vigorous and effective endeavor. Hollow tile contributed, to a most important extent, to the new order of things, not only by making the relatively quick success of the tall building possible, but also by providing an effective medium, at moderate cost, for fire-resistive construction in other types of buildings as well.

The early days of the skyscraper were trying times for hollow tile. Buildings of the new type were scattered here and there among older, burnable buildings, and the exposures were severe in the extreme. The aggregate amount of interior fuel in the form of floors, doors, trim, etc., was enormous. Unprotected window and door openings were the rule, and in those fires which reached the proportions of conflagrations, everything combustible both within and without the so-called fireproof buildings was consumed. Those were terrific tests. The saying became current that "fireproof buildings were not fireproof;" yet to the fair-minded observer the marvel was not so much that these buildings were damaged in such conflagration conditions as that they survived at all. Instead of condemming them, the building profession set about to eliminate the weak points of the earlier forms of construction and to better safeguard against hazards within as well as exposures without. Shutters, wired glass windows, enclosure of vertical openings and the dividing of large floor areas, together with the introduction of sprinklers and the elimination of most of the combustible structural features, gave better protection to buildings and contents. In much of this improvement hollow tile played an important part, for the very availability of hollow tile for the purpose encouraged the extensive introduction of such forms of protection as partitions and stairway and elevator enclosures, which are of the utmost importance in safeguarding both property and human lives. The effective-


Hollow Tile in Steel Frame Construction Showing Columns and Girder Coverings and Floor Arches.

ness of adequate fire stops, consistently arranged, has come to be realized in very recent years as never before. The universal adoption of adequate systems of fire stops in large buildings would mean the passing, for all time, of the large, high value fire. Confined to small space, no fire except in explosives, can get beyond control, whereas, as has been demonstrated time and again, and in a most costly fashion, the fire which finds no effective structural barriers in its path is only too likely to become a raging, racing monster which no human agency can hope to cope with. All those materials and forms of construction which lend themselves effectively and economically to service as fire barriers deserve recognition as important factors in the elimination of fire waste, but it must be remembered that in the earlier development of extensive fire-stop systems, hollow tile was the pioneer and that without this structural medium the progress of fire control must have been seriously retarded.

High Class Country Residence Showing Stucco Over Hollow Tile.

Fire-resistive construction, beginning with the skyscraper, was extended over a wider field, including factory buildings, warehouses and apartment houses. The importance of the part played in this progress by hollow tile may be gauged from the following extracts from a report, made as late as 1903, by Rudolph P. Miller, then Engineer of the Bureau of Buildings of the City of New York:

"Nine tests were made to compare the fire-resisting quality of different materials with that of a 2-inch terra cotta block. * * * The Superintendent of Buildings has the power to define what constitutes fireproof material. Terra Cotta has been accepted as such ever since the introduction of fireproof construction, and therefore was accepted in these tests as a basis of comparison."

Yet it is not only in the cities that terra cotta has gained recognition as the standard fire-resistive material; one of the significant features of the increase of wealth and the growth of better standards of living in this country is the development of the modern country house. High class dwellings, remote from city fire departments, make special demands on structural materials. These buildings are not temporary affairs, to be torn down, after a few decades, to make room for the advancement of a growing city. On the contrary, the conditions are here favorable to the erection of buildings that will endure, without depreciation, for many generations. In such dwellings it is worth while to provide exterior walls that will be proof against dampness and will effectually keep out the cold blasts of winter and the excessive heat of summer. In order to endure for long and to justify the substantial investment which such a house must represent, it must be as safe as possible against fire. Finally, it must be architecturally beautiful. Here again hollow tile supplies the needed material to fulfill the requirements, contributing in no small way to this phase of our national development.

Wholesale Use of Facing Tile in Economical Type of Dwelling Construction.

But it is not alone in the homes of the wealthy that this material contributes to our rural improvement. The practical farmer purchases hollow tile for the construction of his silo and the sanitary dairy barn. Appreciating the importance of permanence, of fire safety, and of the comfort and health of his live stock, he builds in the same substantial, but economical manner, his other farm buildings, including the humble pig pen and the poultry house. So adaptable is this building medium, and so capable of specialization, that farmers are now using well ventilated rat and mouse-proof terra cotta corn cribs for the storage of the corn crop.

Another field of usefulness, and one which bids fair to develop large proportions in the next few years, is that of the individual dwelling of moderate and even of low cost. Year by year the appreciation of permanence and of low maintenance expense is increasing, and the difference in cost between burnable and non-burnable construction is narrowing down, so that it is gradually coming to be recognized that the wall of hollow tile is a good investment, even if faced with brick, and its use in dwellings is steadily coming into favor, in spite of the slowness with which building regulations and insurance ratings adjust to changing conditions. Perhaps a new impetus will be given to this tendency, which is highly desirable from the fire protection standpoint, by the introduction of presentable facing tiles. The old hollow tile wall had to be covered up with something else to make it presentable. Brick facing is expensive, and, while stucco is more economical, not every one wants a stucco house, and it is not desirable from an artistic standpoint that this medium, beautiful as it is when properly handled architecturally, should be given such a monopoly as to monotonize our landscapes. Rather tardily, it seems, but perhaps as soon as building conditions would justify it, the tile manufacturer has now brought forth what seems the obvious thing, in the shape of facing blocks of hollow tile. In point of color and texture there is no difference, and no reason why there should be any difference, between the effects producible in clay tiles and those that are so well known and so much admired, in clay bricks. The material and the process of manufacture are similar. In the matter of size, the tile unit is different from the brick unit because a larger size is more economical and convenient for hollow tile manufacture and erection. How well this new departure is going to appeal to the architect and to the more or less discerning building public remains to be seen. We are used to the brick house, in which the facing unit presents to the eye a surface about 8 inches long and 2½ inches wide. The tile house, with the facing unit 12 inches by 5, will present a new and, of course, in the beginning, a strange appearance; yet there seems to be no reason to believe that such a unit will not lend itself, in the hands of the architect, to the production of pleasing effects in his general scheme, as well as the smaller unit. Bricks have been made about 8x2½, some of them 12x2½ inches, or a little thicker, since the beginning of civilization, or thereabouts, simply because such sizes were practical, convenient, economical sizes in which to make bricks. The architect takes them as he finds them and accomplishes much with them. Influenced by other features which he can obtain only in hollow tile, he will undoubtedly take up this new medium, possibly with some hesitation, and obtain from it architectural beauty which may be as gratifying, or posibly even more satisfactory, than those he has been producing with the other mediums at his hand. Should this be the case, the opportunity for hollow tile to render service in the dwelling house field will be broadened, and we may expect this building medium to meet the needs here as it has already done in other types of fire-resistive buildings.

Considering the breadth of the field covered by hollow tile and the decades of service that it has rendered, it is rather remarkable how little is definitely known about those fundamental physical qualities which determine its usefulness and particularly its fire-resistive properties. In very recent years there has been some activity along the line of determining the strength of tile blocks and of tile walls, and the results of these tests are gratifying in that they indicate that this class of material has structural possibilities that are capable of further development. On some of the important features of this fire-resistive qualities very little definite information is available. Although it has been performing faithful service in fire protection for decades, this material is subject to criticism because of those cases in which hollow tile partitions and other parts of buildings subjected to severe fire, or fire and water treatment, have been damaged, more or less seriously, entailing the necessity of subsequent repairs. It may be that the extent of such damages and the importance of this tendency have been exaggerated. It is natural that this should be the case for the reason that every injury to hollow tile is plainly visible. Either it is injured or it is not, and, if it is, the damage is always exposed where it will show. Furthermore, a rather unimportant damage, structurally, may show up so obviously and spectacularly as to leave a lasting impression on those who walk through the burned building, making casual observations rather than a technical study. While this may work to the disadvantage of hollow tile in the effect on the mind of the building public, there is, after all, a good side to this very obviousness, for it may be said, in fairness to hollow tile, that it is more honest than some materials because it does not sustain injury by fire without showing the extent of that injury. In appraisal, or in repair, there is very little room for doubt in the case of hollow tile.

Unfortunately, no building material that has so far come into use is indestructible or immune to injury from fire and water, and when the backers of one material point to the weakness of another, it is a case of the pot calling the kettle black. One material may be better than another for certain purposes and in certain respects, but there is no one material superior to all others for all purposes nor in every respect. We find many things in favor of hollow tile. We find one thing against it, in its tendency to crack, so that the outer web will break off, in some cases of exposure to fire or fire and water. Such troubles may be expected to decrease with the improvement in our fire prevention construction, for the high pressure hose stream, in particular, is gradually being eliminated from the fire protection scheme, so far as high class buildings are concerned. However, it is not the right attitude to assume that even moderate losses from this cause are inevitable. We Americans are not fatalists. Neither is it right for the friends of hollow tile to assume an attitude of complacency because of the fact that no other material is free from weak points. We are coming to realize, as never before, that we cannot afford preventable losses. Hollow tile is in extensive use, and it is going to continue in extensive use. Is it not a matter of importance to have an answer to the one simple question: Are the fire losses due to the breaking of hollow tile preventable? It is safe to say that no answer will be immediately forthcoming. There is no answer in our literature and none to be deduced from the information to be gleaned therefrom. The published accounts of fires may be either distorted, according to the zeal of the writer, for or against the material, or descriptions may not be sufficiently definite or complete to convey the essential facts from which to draw conclusions. The reports of the limited number of fire tests that have been made are insufficient, and it seems evident that further investigation along this line is both necessary and promising.

We know that clay is not a definite mineral and that the various clays and shales from which hollow tile is made, in various districts, and even in the same district, differ rather widely from each other in their physical characteristics. The burned products from some clays are more easily cracked by quick heating than those from other clays, and the same is true, to some extent, of different products from the same clay. It has been found that, with some materials, even a very slight difference in the process of manufacture may make a surprisingly great difference in the nature of the product in this respect. It has been a matter of frequent observation that porous hollow tiles are less subject to fire damage than dense ones, and while there are objections to the very extensive use of porous terra cotta, these observations indicate that we may expect to find other controllable qualities that affect the behavior of terra cotta under fire. These considerations lead to the belief that investigation would show that the product of some factories has less tendency to break under fire than that of others, and that in the case of a factory whose product was found to be objectionable on account of a pronounced tendency toward cracking, improvement might possibly be made if it were systematically undertaken. As matters stand now, we have no satisfactory standards by which to measure or judge the fire-resistive qualities of hollow tile. The individual manufacturer has no way of knowing what is expected, or what ought to be expected, of his product in this respect, and he cannot, perhaps, be blamed for any seeming indifference about meeting standards which do not exist. The individual architect or engineer finds no standards on which to base his specifications, and so he disposes of the matter by writing into his specifications some such perfunctory requirement as "good, hard burned terra cotta." The contractor is satisfied so long as the goods are delivered on time and are of such character as to permit of their being placed in the building at minimum cost; but the insurance rate which the owner pays when he insures his building includes, we are led to believe a factor of safety, or of uncertainty, which is in some way related to the fact that some tiles, in some buildings, have been known to break under fire. It may be unwise for the layman to try to find reasons in the fathomless depths of insurance ratings, but if the writer were to suggest a reason for the fact that more credit is not given for hollow tile than is given, it would be that somewhere, back in the subconscious part of the insurance mind, there is the instinct, or the feeling, that here is an indefinite sort of a hazard which may at some time develop into a definite sort of loss. Back in the subconscious fireproofing mind there may be the feeling that here is a class of material which is superior and has been superior for decades and which has, as a class, or in general, certain inalienable rights, including that of credit without test. While the insurance mind feels that before a material should have additional credit it should have approval, based on acceptance tests and other requirements. It may be that the fireproofing minds feels that the acceptance test is an artificial sort of thing which does not represent a practical standard. Perhaps a limited amount of systematic investigation, planned and carried out with the one object of eliminating preventable losses in hollow tile, would lead to the adoption of standards that would be acceptable to all interests and would result in an economic saving that would affect, as all large economic savings do, the purchasing public in general. Some suggestions have already been made as to the possible trend of such an investigation. It should be said, in addition, that such an investigation should include a careful determination as to the possibilities of various plasters as protection for hollow tile. Theoretical considerations, as well as the testimony of numerous observers, indicate that the damage to a tile wall is usually due to the quick heating, or quick cooling, or both, of the side exposed to the fire. Plaster has been found to be a moderately good heat insulator, and since the exposed side of structural tile is usually plastered, it seems important to know how much benefit can be derived from the plaster in resistance to this quick heating and cooling. Undoubtedly much depends on the ability of the plaster to stay in place, and therefore if one sort of plaster can be depended on to stay on bettter than any other, that ought to be known, and generally known; also, if the ability of the plaster to stay in place depends in any large measure on the nature of the corrugations in the surface of the tile which give the plaster a grip on the tile, that ought also to be known, so that this as well as every other practical means could be used for the prevention of economic loss.

At the beginning of our participation in a war in which our industrial strength seems likely to be taxed to the utmost, it may seem visionary to dwell on any thought of new investigations of this scope. On the other hand, it does seem worth while that those who are interested in fire-resistive construction, and especially those who are particularly interested in hollow tile, should have these things in mind, so that such information as can be obtained, from time to time, from various sources, may be recorded in such form as to be available for correlation. Hollow tile is rendering a service of great importance over an exceedingly broad field, and all information is of importance if it is put into such form as to assist in cutting down preventable losses and in making it possible for hollow tile to outdo in the future its services in the past.

—Courtesy of the National Fire Protection Association.

Written For The Clay-Worker:

NOTES FROM DIXIE LAND.

MEMPHIS building figures for May showed up well in comparison with other cities South but not equal to former active years. There is a falling off in residence work and leading brick people here say that the warehouse construction is the best line of activity recently. Those Southern cities, the center of government activity, like Little Rock and Nashville, where powder and acid plants are located, show more geenral activity, some residential and business structures being precipitated thereby. Garage and automobile work of various classes is affording some building in Memphis and other cities.

The clay industries through Kentucky and Tennessee are active and there is a large demand for labor. In business remodeling and new business houses the demand for terra cotta and fireproofing tile is good. Brickmaking plants in local territory are running but not on very full time.

The Memphis Builders' Exchange, in its new quarters in the Smimitar Building, is doing good summer work and membership is increasing in bounds.

Mr. Bishop, of the Memphis Brick Supply Co., was seen at his office in the Gordyn Institute recently. In a general talk he said: "Building is quiet. There is some warehouse work. We are showing a fine line of fancy brick and terra cotta products and look to see a good year. We are having plenty of rain through the Mississippi Valley and crop prospects are good."

Among the warehouse jobs of Memphis in progress the last few weeks in which much brickwork figures, are: United States Bedding Co., warehouse; Bosworth Bag Co., Orgill Brothers, hardware. The Royal Building on Madison street, for the Boyd people, is being remodeled. It is a business and office structure and considerable enameled brick work is being done in the same. The Joseph Wade & Co. grain warehouse, of brick, is to be rebuilt from recent fire. County schools at Eads, Tenn., and Bartlett, Tenn., are under way in Shelby county.

The Fischer Lime & Cement Co. report a good demand here and Little Rock branch on sewer pipe, fire brick, terra cotta and specialties.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

PART XXVI.

Kilns.

Kilns may be classified as follows:

- I. Open-top kilns.
  - (1) Periodic in operation.
  - (2) Continuous in operation.
    - (A) Ring kilns.
    - (B) Chambered kilns.
- II. Crowned kilns.
  - (1) Open fire.
    - (A) Periodic in operation.
      - (a) Up draft.
      - (b) Down draft.
      - (c) Up and down draft.
      - (d) Horizontal draft.
    - (B) Continuous in operation.
      - (a) Ring kilns—horizontal draft.
      - (b) Chambered kilns—down draft.
      - (c) Car tunnel kilns.
        - Horizontal draft.
        - Down draft.
  - (2) Muffled kilns.
    - (A) Periodic in operation.
    - (B) Continuous (car tunnel) in operation.

This classification is somewhat incongruous and open to criticism, but it has the merit of arranging the kilns in some relation to the wares produced.

The first general division applies to common bricks, hollow bricks or blocks, and drain tile in small degree.

The second general division includes all other types of kilns and the first subdivision covers a broad field and includes every line of ware from common bricks to porcelain. The white wares, however, are inclosed in saggers which are multiple muffles, and we might properly duplicate several of the types in the first subdivision under muffled kilns, which would leave the first division applicable to common wares—bricks of all kinds, fire-proofing and other unglazed hollow ware. Salt-glazed wares and slip-glazed ware such as stoneware—in fact, any ware that can be burned in contact with the fire gases.

The second subdivision, then, would cover terra cotta and other sensitive glazed wares, white ware, art pottery, etc.

Periodic Open-top Kilns.

The rectangular open-top periodic kilns, known as "scove," "clamp" and "up-draft" kilns, are suitable for common bricks only. It was in such kilns that the ancient clayworkers burned their brick hard, as they were commanded to do, and practically the same kiln is used today in the great centers of the common brick industry.

The term scoved kiln is applied to the mass of bricks instead of to the structure inclosing the bricks, in that we indicate the location as the "kiln yard" or "kiln shed" or "kiln of bricks." Indeed the scoved kiln hardly justifies a name being given to it as a kiln structure.

The bricks are set in rectangular form, with fire arches, etc., and then cased with bricks, sometimes unburned bricks, and the casing daubed with mud.

When the kiln is burned, cooled, and shipping begins, the casing is thrown down, or sometimes loaded out with the

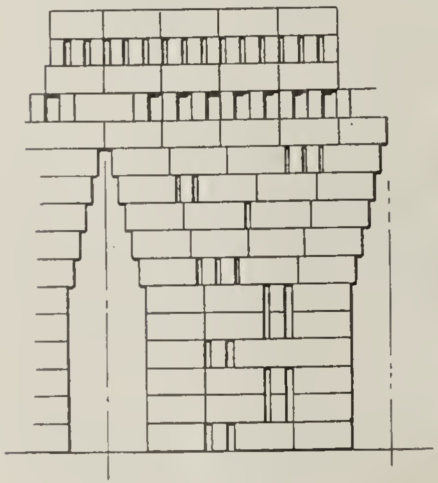


Figure 39.

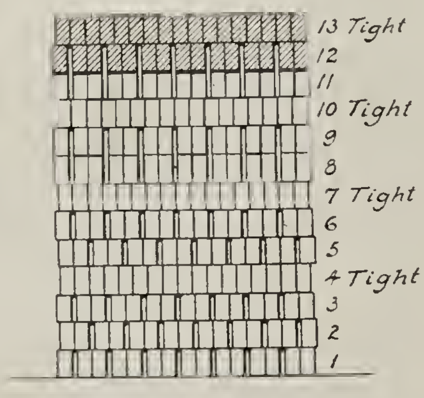


Figure 40.

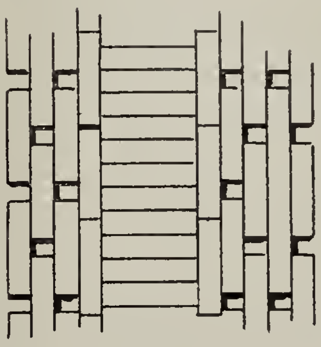


Figure 41.

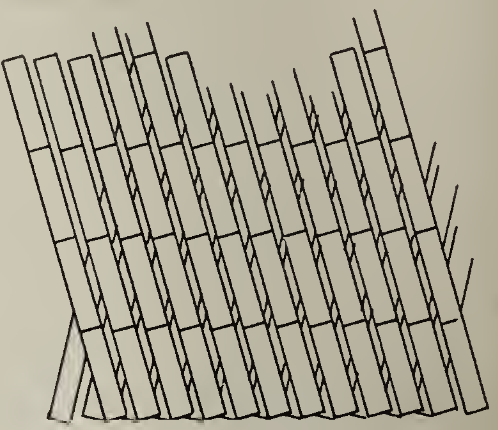


Figure 42.

burned product, and the ground is cleared for a second kiln.

In some instances, especially where coal is the fuel and grate bars are required in consequence, the casing wall is made permanent to a height which includes the fire mouths and arches, and the usual casing starts on top of this wall.

The ordinary casing is eight inches thick up to two-thirds of the height of the setting, then drops off to four inches. Frequently the bottom of the casing wall is twelve inches thick to the top of the fire mouths, then drops off to eight inches and finally to four inches. The casings are laid up dry, then daubed to prevent or reduce the air leakage. When the kiln is finished and ready to fire, the top is completely platted with bricks laid flat.

The bricks in the first course of platting are placed tightly end to end, but the rows are spaced so that each course of the top platting, with its bricks at right angles to those in the first course, will center on the rows in the under course. After the platting is in place, or as it is placed, each alternate third or fourth brick is raised to provide draft. For convenience in lifting the platting, and particularly in replacing ("tightening") it after the "heat is through" to the top, it is an advantage to set on edge each alternate brick in the top course which gives a finger hold on the projecting edge. Usually, however, the alternate loosened bricks are not lifted out, but instead one end is raised and the brick slipped endwise, and it can be hooked back into place when the time comes to tighten the platting.

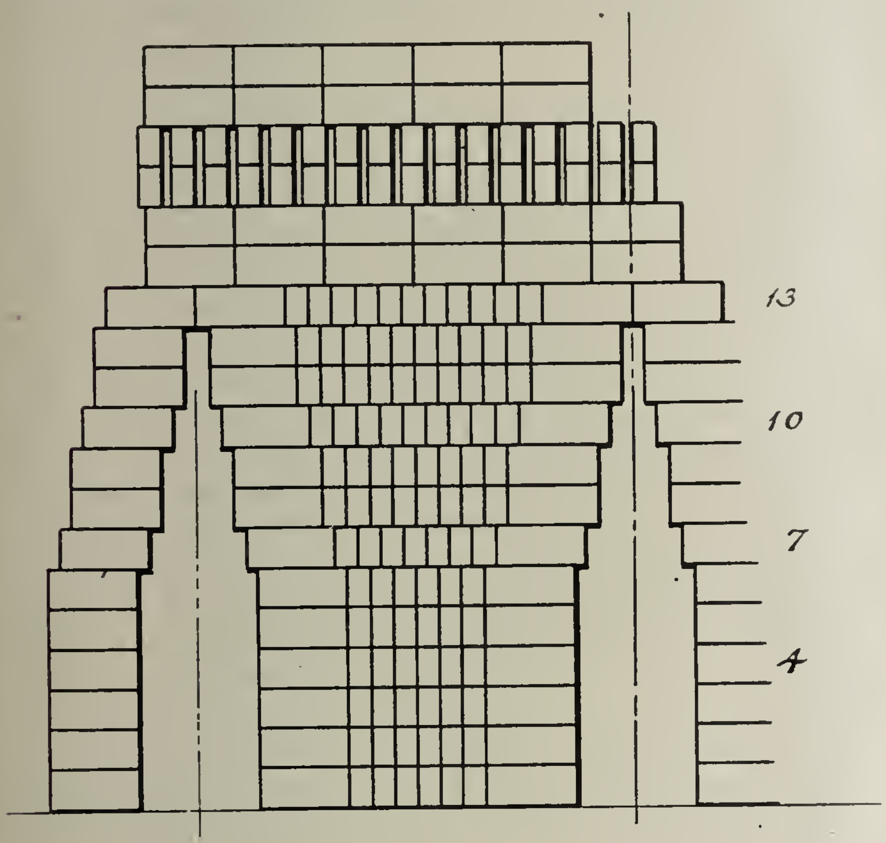


Figure 43.

The cost of casing and platting exclusive of the bricks used varies from $0.15 to $0.30 per thousand bricks set in the kiln. This is a serious item in the cost of the product, and the question may be asked: How can such kilns compete with other types of kilns?

The cost of installation is very small in comparison with other kilns, thus eliminating interest, depreciation and upkeep, and the capacity per kiln is unlimited, varying from 100,000 or less to a million or more bricks, usually ranging between 250,000 and 700,000 bricks. They are more economical in fuel than other types of periodic kilns.

The kilns are placed alongside the loading tracks or docks, giving short runs for loading, especially in view of the fact that the bricks may be taken from any point along the kiln to the car or boat placed opposite such point, whereas in permanent kiln structures the route must be through the kiln entrance.

The kilns being open and rectangular, the setting and drawing can be done at a minimum cost.

Finally, because of the small cost of the kiln—in fact, nothing more than the cost of any storage space—the bricks may remain in the kiln until they are sold, thus saving a double handling.

The bricks are set in benches, the legs of which have a width of 2½ bricks (21 inches) or 3 bricks (26 inches) or 3½ bricks or 4 bricks, with a space of 12 to 16 inches between the legs for the fire arch. The height of the setting is commonly 42 courses of bricks on edge, but in some instances 54 courses are the setting height. The former height is established by the ability of a man (tosser) to toss the bricks in units of 4 or 5 bricks to the setter. Higher setting requires an extra man standing on a lower bench to receive and toss the bricks to the setter working on an upper bench. The average 3-brick bench kilns, set 42 courses high, hold about 20,000 bricks in each bench, varying from 15,000 to 30,000, depending upon the width of the kiln, and higher setting will increase the quantity correspondingly.

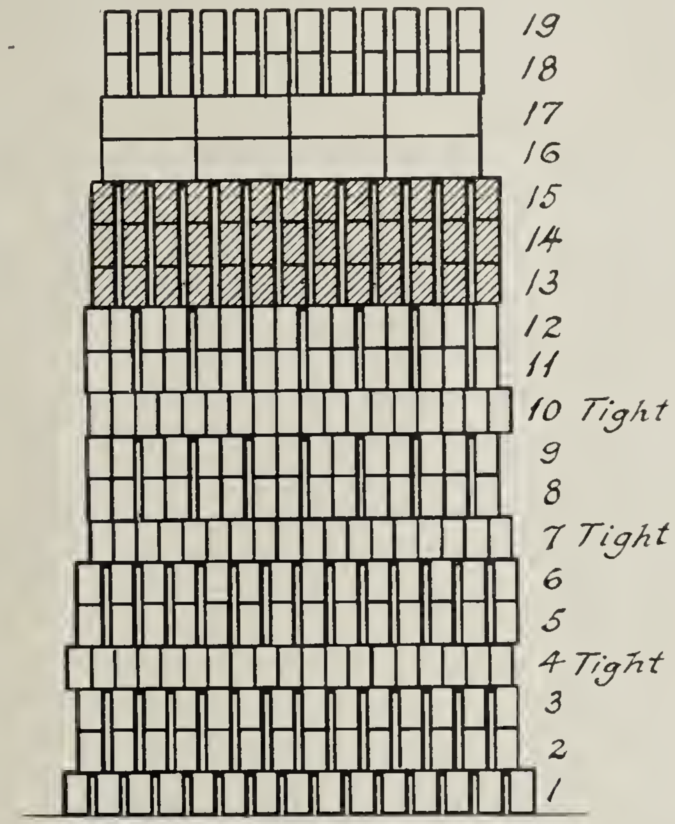


Figure 44.

The length of the kiln is simply a matter of convenience or yard arrangement and is designated as so many benches, arches or "eyes."

In the large common-brick centers the kiln shed is a thousand or more feet long. The kilns are set longitudinally in the shed and the coal and shipping track are parallel to the kiln on each side either under the shed or just outside.

Where the shipping is by water, the kiln shed and kiln are close to the dock and parallel to it.

The setting begins at one end of the shed, although not essential, and depends upon whether the old stock has been moved. As soon as sufficient benches to constitute an economical firing unit (in one district four arches are the unit for one burner, day and night, in another five arches) are set, the end of the kiln is closed, cased and daubed, and the fires started. The sides of the kiln are cased as the setting progresses.

A second, third, etc., kiln continues the setting to the other end of the shed. Meanwhile the first kiln will be burned.

(Continued on page 794.)

COLOMBIA AS A TRADE FIELD.

Interesting Facts Relating to the Most Northern of the South American Republics, Its People and Its Commerce.

In A PREVIOUS article on the subject of the wider field for machinery, explanation was made that among the export possibilities, there were two broad fields. One, that of Europe and the older countries; the other, that of the Latin American countries, or rather to all of the North and South American countries not embodied in the United States. It is the intention here to give some interesting data about Colombia and the possibilities of trade development in that field, data for same being obtained from a recent publication of the Department of Commerce, entitled "Construction Materials and Machinery in Colombia."

Colombia is the most northerly of the South American countries. It has an area of 435,000 square miles, about equal to the area of New England, Middle Atlantic and South Atlantic States. It has coasts on both the Atlantic and Pacific Oceans. It is the third nation in South America in population; the last census showing a total population of about five and one-half million.

The principal cities in the order of their importance, are Bogota, the capital, with a population of 140,000; Medellin, 71,004; Barranquilla, 48,907; Cartagena, 36,632; Cucuta, 20,364; Manizales, 34,720; Bucaramanga, 19,735; Popayan, 18,720; Cali, 27,747; Santa Marta, 8,346, and Tunja, 8,961. There are other cities of less population, but of importance.

Among the national industries of Colombia so far developed, are the manufacture of cement, hydraulic and common lime, clay products, sand-lime brick and window glass, among the building materials. The clay products consist of common brick, fire brick, sewer pipe, sanitary pottery, roofing tiles and glazed wall tiles.

In the earlier days of development architecture was of primitive character and most of the construction was of adobe walls with the roofing made of wooden poles and tiles of baked clay, Spanish style. For mortar clay and for external finish, river sand was used with a small portion of lime. At the present time the following materials are used in construction work and architecture is beginning to manifest itself. For walls, brick shaped stone and concrete blocks. For foundations, rough hard stone, concrete, and for mortar, various mixtures of sand and lime, sand and hydraulic lime, sand and cement and plaster of Paris. For roofing, the old fashioned clay tile is still chiefly used; French tiles and metallic roofing has entered some on mansard roofs.

From the data compiled, it is evident that brick work is used to a greater extent than stone for walls of buildings, and that the use of brick may be greatly extended by the introduction of American labor-saving machinery to manufacture it more economically, and modern types of American kilns to insure a better quality of product.

There enters a question of brick sizes. The sizes there seem to run thin and long. For example, it is said that the brick in general use in Barranquilla is 12.5 centimeters wide by 25 centimeters long, and 5 centimeters thick. Reduced to inches, that would be equivalent to a brick in the rough state before burning, about 5 by 10 by 2 inches. A smaller brick is made which roughly speaking, will approximate when green, a size 4 by 8 by 2 inches.

The price of brick seems to vary widely, more with the seasons of the year than anything else, ranging from $6 gold, to $12 gold, per thousand. As a rule, too, they have such irregular form that they are not used commonly to make the face of the walls as we use brick in this country, but simply make the body and the wall is plastered over both on the outside and the inside with either lime or cement mortar. Some face brick are made and some are bought, but the high cost of these so far has retarded their use.

It is evident from reports on this point that there is room to develop quite an interest in face brick manufacturing in Colombia, and it is probable that what we regard as a good common brick in this country would for the time being at least, fill the mission of a face brick in Colombia. Eventually, however, it should be practical to introduce and popularize face brick and the color variety in architecture obtainable thereby, pretty much as we have it in this country, because anyone who is familiar with the appearance of an outside plastered wall can readily understand the artistic superiority of face brick in architecture.

A further report states that most of the building brick are made by hand in hundreds of small yards by the most primitive means. The quality is poor, the size and shape irregular and the kilns are somewhat primitive and unsatisfactory.

It is said that in Bogota ordinary brick clay is abundant and of good quality and that it exists both in the city limits and in the adjacent urban districts. Only two yards have so far been operated in that locality with machinery and these have made a fair quality of brick, using American machinery. At one of the yards ornamental front brick are made, so it would seem that already the idea of artistic face brick has been introduced in Colombia and this should offer a field for development and through which there may be encouraged a goodly trade in American machinery and equipment for brick making.

So far, there has been no interest manifested in architectural terra cotta or similar material for outside ornamentation. Most of the ornamentation of this class is now obtained by the use of plaster or concrete or some mixtures with a clay base.

Some refractories are made in Bogota, at Caldas and Antioqua. Taking the country as a whole, they still import some fire brick, but is is evident that fire brick making will be one of the lines of development in the future. At the present it is said there are three principal plants in Colombia where fire brick are manufactured, two of them being at Bogota. Also, there are a number of small yards without machinery where some grades of fire brick products are made, especially to supply the interior needs.

During the past few years modern sanitary plumbing and an interest in interior glazed wall tiling has been developed. There are two factories at Bogota and one at Caldas where glazed tiles are made. These tiles are used for bath room and kitchens.

Clay roofing tiles of Roman, Spanish and French patterns seem to be made widely over the country and this class of roofing is used more than any other. The custom of using these tiles has come down from the days of early colonization of the Spaniards. The roofing tile is made in the larger cities in the brick yards and in the smaller towns in many small yards by the natives, who bring the material by cargo mules to places where buildings are being constructed. As a rule it is said the material is of ordinary grade and not very well burned. So there should be room to introduce improved machinery and burning methods for roofing tile, and this should be done lest the composition roofing and the metal roofing crowd the old traditional clay tile out of favor.

In the general sanitation and drainage scheme there enters sanitary fixtures and also the extensive use of sewer pipe and sewers and drains built with brick.

The usual plan is for the drainage from the houses to converge into sewers the length of the streets. The sewers are of three types, circular, semi-circular and oval. The circular sections of course, are sewer pipe, while the oval drains are constructed with brick laid in lime mortar with a covering of cement.

One factory is reported in Bogota which makes vitrified sewer pipe. This factory was established about eleven years ago by Plantagenet Moore. Prior to this time the glazed sewer pipe industry was unknown in that country and the small quantity of pipe used was imported. Some ordinary drain tiles have been made by hand from common brick clay similar to some old examples of pioneer clay piping to be found in this country. In the early days, too, these primitive clay pipes were used for conveying water just as they were in this country.

The sewer pipe made at the one factory there seems to be of the regular type familiar in the United States, and it is said that at first there was considerable difficulty in introducing it. The builders were not familiar with it and made many objections but these have been overcome and the demand for sewer pipe is increasing so that the indications point toward a wide field of possible development in machinery for this purpose. Heretofore, this machinery has been obtained from England but this is a line, like that of brick machinery generally, which should now be supplied from the United States.

Taking it altogether, Colombia offers an interesting field for possible development in clayworking machinery, a development which should be gone about in a systematic and thoughtful manner. The country has extensive natural deposits of earth and rock material, and while the clays and shales may not compare with the best of those in the United States, it is evident that plenty of good enough quality to meet the needs can be had. And there, coal is also available for the burning, often too, clays are found in the cold measures which make a good combination for development.

Much of the development and of the future trend of architectural ideas and building materials down there will depend directly upon the activities of those interested in the development of clay products. There is another line of possibilities—that of cement and concrete—and the cement machinery people have already been actively at work. So naturally, if the field is neglected by the clayworking machinery people it may be expected that concrete construction will gain and that clay working and the interest of brick will lose in production.

Those desiring to cultivate the market there should go about it carefully and thoughtfully. There are certain commercial practices and requirements that should be looked into, including everything from packing and inventories to terms of sale.

Perhaps the best way to start, for those who have not heretofore investigated the subject, would be to write for a copy of the booklet from which data was obtained for this article. It is known as Special Agent Series No. 160, the title is "Construction Materials and Machinery in Colombia," and it can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents.

Reports of cost committees these days are generally made up of additions incident to unexpected incidents.

HELP THE WAR WORK AND THE WAR WORK WILL HELP YOU.

It is not a culpably selfish view to take of present-day conditions when we wake to the fact that all we do to aid in war preparations or war relief work reacts in an absolute and practical gain to ourselves.

Every effort we make, every sacrifice we make, yes, even every mistake we make, adds to our experience and does its bit to strengthen our better character.

For the war, grim teacher though it be, is showing us how to acquire the finer and nobler traits, and as luxury, idleness, and self-indulgence disappear their vacant places are filled by economy, hard work and sacrifice.

Who will say this is not for the good of our Nation? For the good of the youthful element, learning its earliest lessons of thrift and saving. For the good of the middle-aged, who can contrast and compare the thoughtless past with the thoughtful present. And for the good of the old, whose long experience has given them a sense of relative values.

So let us increase our efforts, spur on our enthusiasm, and accept deprivations willingly, yes, even cheerfully, knowing that our war work, like our Liberty bonds, will sooner or later bring us real and personal gain, a true interest in our investment of time and labor.

POSTAL TAXES.

No one has been inclined to find fault with the general proposition of using the Postoffice Department as a means for collecting some revenue for government needs. For example, an extra cent on our letter mail is recognized and accepted as a purely tax or revenue provision, and there is no more protest against paying taxes in this way than any other way. It is fair to all and evenly distributed. In the postal law pertaining to periodicals there is a zone proposition which is manifestly unfair because when your letters and circulars are carried to any part of the country at the same price it is sought to make discrimination in the rate on periodicals that is unfair and unreasonable. An increase in the rates of second class mail may be accepted as a tax measure, just as an increase in postage, but the zone idea should be cut out of it so that the man at a distance may receive his favorite publication on the same basis that he receives his letters and circular matter.

The Goose with the Golden Eggs.

—Murphy in the San Francisco Call.

OF INTEREST TO DRAIN TILE MANUFACTURERS

THERE ARE MANY means and methods which will greatly reduce the manufacturing cost of your product. It behooves every manufacturer to carefully study his various departments and adopt those principles which work for a saving in time, labor and fuel. With the scarcity of labor, economical handling of the raw material and the product is absolutely necessary. Are you using those appliances that reduce the number of men otherwise required?

The gasoline locomotive replaces 15 horses and carts and can be operated most economically. It would cut down the number of men used in the clay gathering who could be used in various other parts of the plant where the work is more attractive, though men are hard to find to fill these positions.

Why not eliminate the manufacture of those odd sizes of tile for which there is little demand and run your 75 per cent. capacity on those sizes that have a quick and ready sale?

The farmer gets more for a bushel of corn, a bushel of wheat, a ton of hay or a pound of beef than he ever got before. He should expect to pay more for his tile.

That busy tractor which is helping solve the plowing problem for the farmer will also help in the ditching for tile drainage, so it ought to make for more ditches of drain tile.

Because the high price of metal makes machinery cost more is no excuse for hunting the cheaper machines instead of the better ones, because the best is the cheapest in the end.

The more thorough and complete you have your equipment for mechanically handling clay the less worry you will have about keeping enough labor, and the indications are that help will be scarce enough this year to make mechanical handling equipment more worth while than usual.

There are so many different ideas offered for saving fuel in burning that it becomes confusing to the investigator at times, but each seems to have its peculiar merits for certain local conditions, and it pays to study them.

The United States Fuel Administration order restricts the drain tile manufacturer in two particulars, fuel consumption and field of operation. In regard to the former, you can use but 75 per cent. of the fuel consumed annually based on the average of the years 1915, 1916 and 1917. If, however, you can make 100 per cent. or more production with the 75 per cent. fuel, you are permitted to do so, the sole purpose of the curtailment being the saving of the 25 per cent. of coal. The government realizes the importance of drain tile and does not wish to decrease the production only to the extent of saving the percentage of coal specified. The limitation in point of field of operation is that you must confine your business to the products made previously. If you made brick and tile you can use but 75 per cent. of the fuel used on the tile previously made and but 50 per cent. of the fuel used in making the brick and this 50 per cent. to be used in producing brick. For instance, if your production was 30 per cent. brick and 70 per cent. tile, you can not make your entire production now on tile covering the fuel used on both. You can use but 75 per cent. of the fuel it took to produce your tile. The same is true with a combination of other materials; hollow tile, sewer pipe, flue lining and drain tile are restricted to 75 per cent.; brick, roofing tile, floor and wall tile, sanitary ware and terra cotta, 50 per cent., while stoneware is 85 per cent. Refractories are not curtailed on account of war necessity.

This ruling regarding field of operation prevents the manufacturer of any other material turning to drain tile and vice versa. The government gives any manufacturer, however, permission to appeal to the fuel administration on blanks furnished by the local fuel administrator, but favorable action will only be secured on the strength of argument set forth that the change desired is beneficial to the government in winning the war.

The clay product manufacturers should make their product a necessity. The common brick manufacturer, as well as the hollow tile maker, should see to it that store houses greatly needed in all parts of the country should be erected of clay products. If your material is needed in government work, you will have no trouble in securing permission to operate to capacity, it is up to you therefore, to set the proper machinery to work to secure store houses in your territory and to enter your plea with the fuel administration board.

In regard to filing your reports, we quote the followng from Mr. Garfield's order:

"It is ordered that on or before June 30, 1918, each manufacturer of drain tile shall report to the United States Fuel Administration the number of drain tile manufactured and the amount and kind of fuel consumed during the period from January 1, 1917, to December 31, 1917, and the amount of stock on hand December 31, 1917, and that thereafter semi-annual reports showing the number of drain tile produced, the amount and kind of fuel used and the stock of tile on hand, shall be made for the period from January 1, 1918, to June 30, 1918, and from July 1, 1918, to December 31, 1918. The report for the first period shall be made not later than August 1, 1918, and for the second period not later than February 1, 1919."

We print herewith a miniature of the blank the government requires manufacturers of drain tile and other clay products to fill out and mail to United States Fuel Administrator, Washington, D. C., on or before June 30, 1918.

REPORT TO BE MADE TO THE UNITED STATES FUEL ADMINISTRATION ON OR BEFORE JUNE 30, 1918, UNDER THE ORDER "ESTABLISHING A REGULATION TO RESTRICT FUEL CONSUMPTION BY THE MANUFACTURERS OF ——"

"It is ordered that on or before June 30, 1918, each manufacturer of ——shall report to the United States Fuel Administration the number of —— manufactured and the amount and kind of fuel consumed during the period from January 1, 1915, to December 31, 1917."

Location of plant or plants:

....

....

....

....

Kinds of products manufactured:

....

....

....

Amount of each produced: *

	During	
1915	1916	1917
....	....	....
....	....	....
....	....	....

*Return to be made in the unit usually used, as pieces, thousands, tons, etc.

Average annual production of each for above three years:

....

....

....

Stock of each product on hand December 31, 1917: ....

....

....

Amount and kind of fuel consumed during

	Amount	Kind
	....	....
1915	....	....
	....	....
	....	....
1916	....	....
	....	....
	....	....
1917	....	....
	....	....

Average annual amount and kind of fuel used during above three years:

Amount	Kind
....	....
....	....

Firm ....

(By) ....

Title ....

Date ....

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

EACH MONTH finds the interest of the government and the people centered more and more on the problem of winning the war. Destruction rather than construction is becoming the real occupation of the people, and as a consequence building shows a constant decrease. It has not ceased, however, nor is it apt to cease altogether, as there is absolute need of certain buildings and each week sees a stream of contracts for structures more or less pretentious. Naturally these are not all of brick, for in this state lumber is still plentiful and in many places the frame building is still the most popular. Of late years concrete has had a popularity and many contracts call for buildings of this material, but enough brick buildings of various kinds are being contracted for to take care of the output of building brick on the fifty per cent basis, and perhaps a little more. At any rate, the building brick makers are not worrying that they will be unable to dispose of their stocks before the next season of brick-making begins.

The matter of labor gives the manufacturers some uneasiness, however. While it is not likely that many brick laborers will go direct to the shipyards, there are many lines better paid than their own in which they would fit with very little adjustment of their capabilities. As the shipyards increase and draw skilled labor from various sources, labor only a little less skilled steps into the places made vacant and the same process follows all along down the line. In this general upsetting of conditions better pay or better conditions are being offered the brickmakers, and to keep them the manufacturers have to make repeated increases in pay. Such an increase went into effect the first of June and another may be made within ninety days. With these advances the price of brick will soon have to go up also, so the manufacturers are not worried over paying their help more money. The matter which is really serious and for which they have not yet reached a conclusion, is that with the necessity of closing down for a half-time run, their experienced labor will get away to some other trade and when they are needed again their places will have to be filled with a lower class of labor. This is a condition which is going to bear down hard on the smaller manufacturers next season and probably after the war. The larger works will turn to labor saving machinery, but the little fellow cannot afford this initial expense, and a continuation of the present conditions over another year may see the permanent closing of what a year or two ago promised to become a successfully established business.

The State of California has had a good deal of building construction authorized and in many cases bonds have been placed so that the money is available. With that knowledge the brickmakers were a little astonished at a recent telegram from Sacramento to the effect that the State Board of Control had decided that there should be no more new buildings until after the war. The general opinion is that the decision was intended to be effective for Sacramento only and did not affect additions and buildings in other parts of the state where such buildings were really needed. This view of the matter is borne out by the announcement that plans are being figured for a pathological laboratory for the state hospital at Napa to be erected of hollow tile at a cost of $85,000. A second evidence that the order is not to be generally observed is evidenced by the letting of a contract on June 3d, for the erection of a brick bakery and laundry building at the Sonoma State Home, at a cost of $28,845.

The California Brick Co., makers of paving brick, whose plant is at Decota, Cal., and the Cannon Phillips Co., makers of the Dennison Patent Tiles, near Sacramento, are said to have exhausted their fuel allowance for the year and closed their plants until 1919. These are the first two California brick plants to close because of this governmental order.

The local brick men are somewhat confused over the order increasing freight rates. Some contend that the order increases the freight on bricks 25 per cent over the previous rates, while others insist that the increase is 50 cents a thousand, while a few are of the opinion that the new rates will be a combination of both, or 25 per cent increase plus a flat increase of 50 cents. It is likely the confusion arose over someone figuring that the increase from his kilns to San Francisco was 50 cents on the 25 per cent increase basis, and someone else took this as a flat rate. At any rate no two men in the trade will agree as to just what will have to be paid by the public. Many of the brick men have had a custom of quoting prices f. o. b. at the point of delivery, and some of these may be pinched in the rate confusion, while some others may lose a contract because they have quoted too high a price to take care of a freight rate which does not exist.

The United Material Co., San Francisco, has been awarded the contract for the Old Homestead bakery in San Francisco. The contract among other things calls for 100,000 enameled and 50,000 fire brick and a large amount of ordinary building brick.

J. T. Roberts, of the Stockton Fire and Enamel Brick Co., went East the first of the month to attend the session of the Refractories Manufacturers Association, to be held jointly with the Federal Trade Commission in Washington on June 10th. Mr. Roberts will spend about a month in the East during which time he will visit all the centers of the fire brick industries. The Stockton Co., has been successful in landing contracts for furnishing fire brick for many of the ships of the emergency fleet now being built on this coast. As there are about 120 of these vessels already contracted for, the demand for fire brick is large from this source.

The State Agricultural building at the fair grounds, Sacramento, is the largest public building in the course of construction in California today. Contracts for furnishing 500,000 face brick for the building have been let to the Richmond Brick Co. N. Clark & Son secured the contract for the terra cotta, amounting to $15,520, while the contract for terra cotta tile roofing went to Gladding & McBean, for $12,100.

N. Clark & Son, of San Francisco, whose plant at Alameda was destroyed by fire last year, is making good progress now towards rebuilding. Plans are being drawn for seven kilns and a dryer, 100x300 and two stories high. Construction is under way on the new power plant to cost $5,000.

Since the importation of finer clays for pottery has been cut off by the war a search has been conducted for a substitute, and it is reported here that samples of red and black clays taken from deposits used by the Indians centuries ago along the line of the Santa Fe railroad in New Mexico, indicate that a perfect substitute has been found. It is said that the first tests have been so successful that some extensive experiments are being conducted with a good prospect that an important business may be built up in the production and handling of these clays.

The West Coast Porcelain Co. is making good progress with its new plant at Milbrae. The building, 300x50, is nearing completion and the works are expected to be under operation in a few weeks. Borings have shown that the site is underlaid with stratas of clay which may be used in the works.

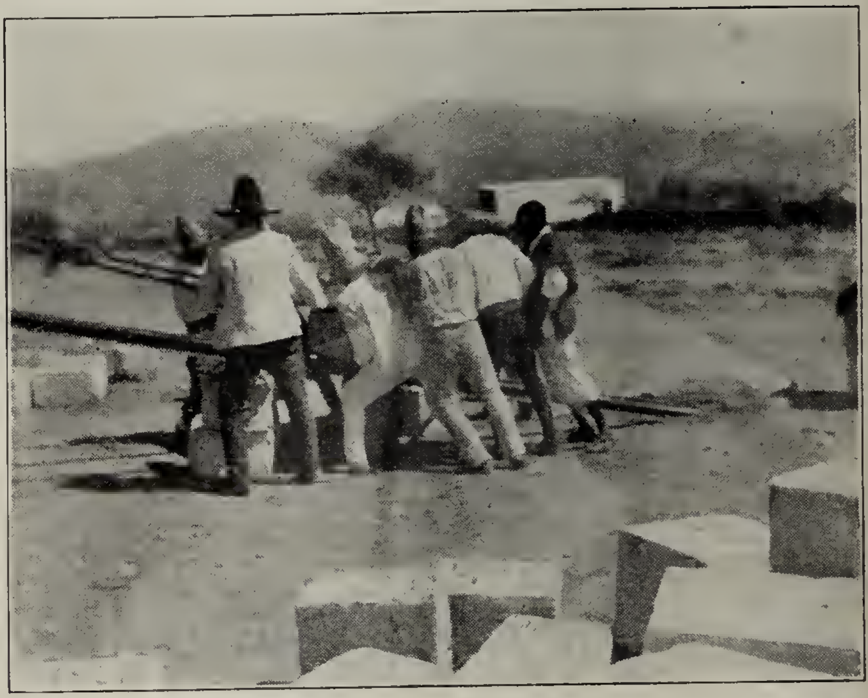
SUNSET.

San Francisco, Cal., June 4th.

CARVED TAPATETA.

MANY of the famous clay ruins of Mexico consist of unburned natural clay called tapateta. We show herewith two interesting views, one of which shows the classically carved front of the Cathedral at Zacatecas, Mexico, erected more than three hundred years ago.. Tapateta was the material used in its construction.

Zacatecas (meaning child of the desert and the mountains) stands on the Rocky Mountain range in Mexico, eleven thousand feet above sea level. It is a very important and old city, with nearly fifty thousand inhabitants, and has silver mines which have been worked for hundreds of years. The whole of Mexico, from Zacatecas south, with its natural reprehistoric ruins, and its many and ancient churches and cathedrals, second to none in the world, has been attractive to the tourist.

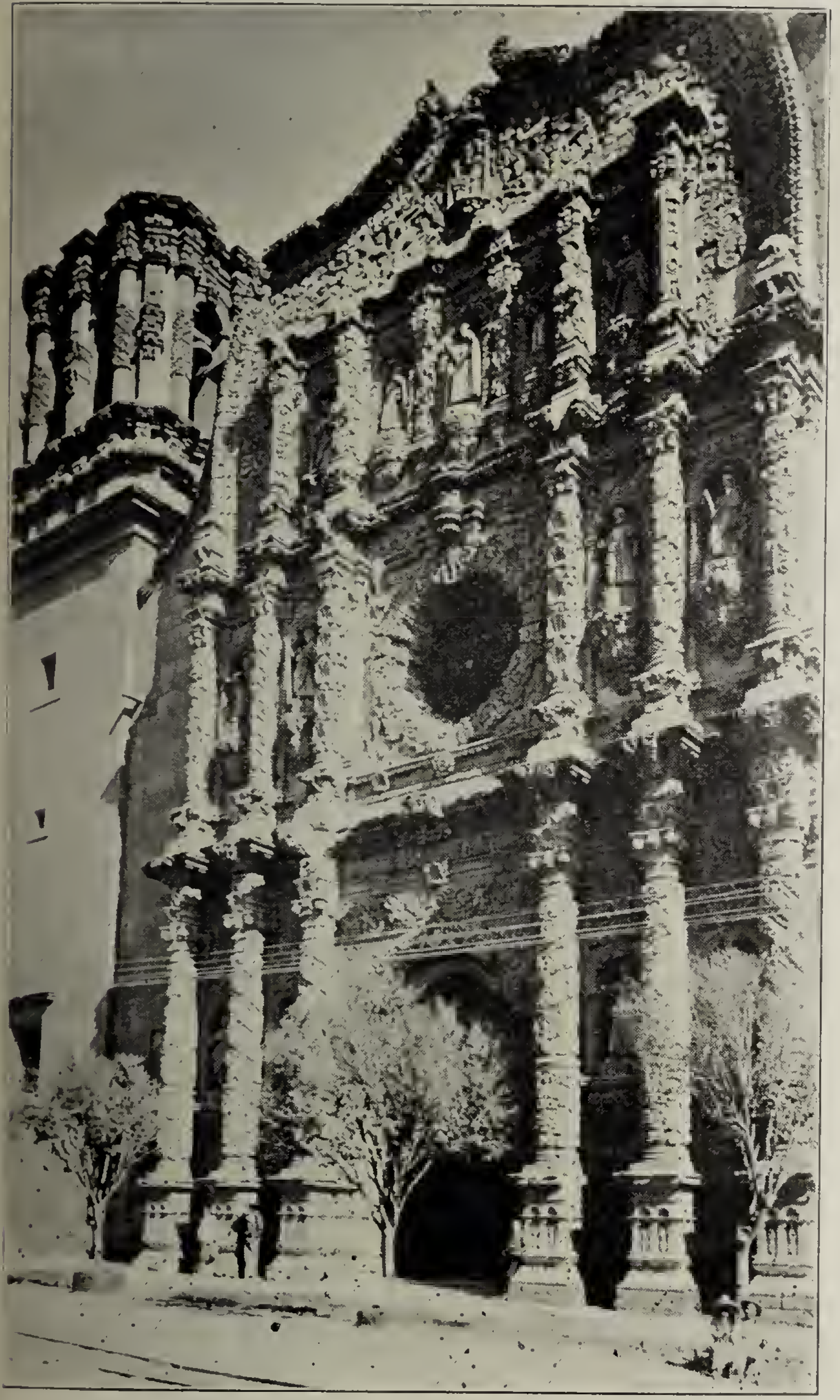


Tapateta Cut for a New Building.

Method of "Hauling" Material to the Building.

As one vists these places and sees churches and cathedrals, many of them over three hundred feet in height, for instance, the Cathedral of Mexico, in the city of Mexico, the one pictured herewith, and all without a pillar or post in their interior, the clay ware handler and the building trades worker wonders how they were built. (No machinery is permitted to be used. Everything must be done by hand labor in order to afford work for the people.) The plan and construction of these edifices would do honor and credit to the ablest engineer of our own times, with all the appliances of modern building at his command. How the work was performed by those who had only bare human strength to put in operation, may well excite wonder and admiration.

To watch a gang of Mexican laborers at work putting up a new building will break the heart of an American. The material used is a natural clay that requires no working or mixing, called tapateta, which is cut out of the hillsides with a large knife called a macheta. The material hardens by exposure to the elements. All material is carried to the patio or open court in the center of the proposed building on the backs of peons or burros. A trench is dug and the foundation commenced, one peon mixing dobe and water for mortar in a hollow log with a stick, while another carries the material to the trench for the mason. When the structure has reached the height of about five feet above the ground a scaffold is made on the outside of the building of wooden beams securely tied with ropes, across which other beams are laid, and the laborers carry the material up a series of inclines. The hod-carrier carries the native mortar to the mason in a bag, while another carries up the large or small pieces of tapateta; the latter will weigh from twenty-five to two hundred pounds. The scaffold is used by the tapateta carvers after the building is completed. This is an art in which they are very skillful. The claim is made that the carving on the front of the cathedral at Zacatecas required over twenty years to complete. The inside of the building is filled with the dirt, rubbish and pieces of building material as the walls go up. After the building is completed this waste material is removed in bags and carried to some dumping ground.



Twenty Years Were Required to Carve the Front of the Cathedral at Zacatecas, Mexico, Built Early in the Sixteenth Century.

—Courtesy Bricklayer, Mason and Plasterer.

Written for The Clay-Worker.

WITH CINCINNATI BRICK MEN.

IT LOOKS LIKE a dull summer here for the clay interests. The present indications are not calculated to be a profitable season for anything in the structural line and while there are some projects under way and others in contemplation, there is a lack of life to the industry that makes it lack that teem with an old-time hustle. It is said that there is a fair number of projects in line, and still the uncertainty of the future makes the situation less promising.

In this city there have been some contracts let and other rumors of large buildings, but the trouble appears to be that some of these at least are not more than hearsay plans. This is said to be the case with the thirty-five-story building that was talked of some weeks ago as being erected by the government. Nothing further has been given out about this and it appears that the matter will not materialize.

There was a meeting some time ago of the Master Builders' Association at the Builders' Exchange for the purpose of making an endeavor to obtain some of the contracts for the construction of the nitrate plant that is to be erected at Elizabethtown by the government. That this will be a certainty cannot be doubted, but just when the contracts will be let for the work is another matter.

It is said that more than $300,000 will be spent by the Trailmobile Co., in the construction of a plant here. The plans call for a number of buildings of brick and steel, and it is said that the government sanction has been obtained in the matter of securing the materials. Plans are being prepared by Architect Ernest Chace, in the Union Trust Building, and the project is to be one of the largest undertakings here. The first plans call for structures that will cover 80,000 square feet of floor space and the office building will contain 12,000 square feet. When the matter of construction will begin on this cannot at this time be said.

There is little being done at the building brick plants in this section. Only two of them so far as is known are operating, and the fact that labor is scarce, fuel hard to obtain and the government regulations rather severe as to the output, with the curtailed demand, does not augur well for the future of the industry. There has been so little work done that the brick men are not greatly encouraged in the face of the many obstacles. The same might be said to a degree with the other clay lines and the situation does not appear to offer very favorable indications.

The creditors of the Anders Shale Brick Co., bankrupt, have been given a first dividend of 5 per cent.

The name of the company that will succeeed this company is to be known as the Queen City Shale Brick Co., and operations are to be started here in the very near future. The plant is being put in trim for this, and it will soon be under way.

What will be known as the Morris Plan Bank will be erected here on Sixth street. It will be a two-story structure, and the contract has been awarded to the Ohio Building and Construction Co. Work will be started very soon.

The M. Marcus Building Co. has a contract to construct a group of buildings for the Peerless Foundry Co., to cost $75,000.

C. C. and E. A. Weber, architects, have been receiving bids for the erection of the Traders National Bank Building at Mt. Sterling, Ky. It will be of brick with stone front.

The plant of the Blair Brick Co. has not as yet begun to operate this season. What will be done in the future in this way is hard to say now, as the conditions are not as promising at this time as they might be.

The Mitchell Brick Co. has been operating in a way for a time, but the labor situation has been one that has been causing them some trouble. The number of orders have been much less a source of bother to the operators than the question of getting enough labor of the right kind to keep the plant in full swing.

The Cincinnati Clay Co. say that there have been some rather discouraging drawbacks of late that are not helping the clay products demands. The high rate of freight, labor and other troubles are not in the least of the kind that are going to make the future of the clay operators a pleasing one.

The D. E. Shorey Brick Co. has been getting some orders, but the number of them has been limited and the indications are not caluculated at this time to help any. They have been sending some brick out, and making the business move a little, but not any notable demand has been seen for a long time.

The report with the Brick Sales Co. is not flattering, and the orders are few and far between for clay products, and the future does not seem to offer anything very favorable.

Conditions are very quiet with the Builders Brick Co., with the indications at this time not flattering.

THE NEGRO AND THE BUILDNG TRADES.

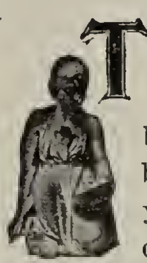
In presenting to the Chamber of Commerce of the United States the proposition of the economic value of negro education, the committee on statistics and standards of which A. W. Douglas, of St. Louis is chairman, compiled a statistics of occupation of negroes. These show something over three million engaged as bread winners of which a little more than half are farmers and farm laborers. Leading the occupations aside from farming in the employment of negroes is employment in the building trades. The statistics on this point show the following:

Negroes Employed in Building Trades.

Laborers	166,374
Carpenters	30,511
Laborers in brick factories	15,792
Lumbermen and raftsmen	14,005
Brick and stone masons	12,401
Painters and glazers	8,915
Plasterers	6,175
Builders	3,272
Sawyers	3,151
Plumbers, steamfitters, etc.	2,285

One of the purposes in setting forth the statistics above is to call attention to the fact that more of the colored element have been trained as carpenters than as bricklayers. This plainly indicates an opportunity to not only improve conditions among the negroes, but also to do a good work for the future of brick in building operations by promoting interest in the training of the young negro in bricklaying along with his other schooling. It should be well to bring this thought to bear with emphasis on the Chamber of Commerce of the United States and other agencies which might render effective help.

BRICK AND BUILDING NEWS OF EVANSVILLE AND SOUTHERN INDIANA.



TRADE WITH the brick manufacturers of Evansville and other towns in Southern Indiana has been rather slow for the past month and it is not believed there will be any real improvement in business for some time to come. Many of the brick yards are either running on short time or are shut down. In the opinion of many of the manufacturers in that section if this continues there is bound to be a shortage of brick before the close of the present season. The government order of some time ago curtailing the use of fuel, and fixing it at fifty per cent less has had effect on practically all the brick manufacturers in the southern Indiana field. There is not as much building going on as in former years. In Evansville the building permits for the month of May were about one-third in value of the permits issued during the corresponding month of last year. John Andres, the secretary and treasurer of the Standard Brick Manufacturing Co., at Evansville, says that the outlook for summer and fall trade is not very promising. The three large plants of the company have not been operated steadily, and one plant has been closed for some time past. The company furnished the brick for the Junior high school building in this city, and work on this structure has about been completed. The company will furnish the brick for a new addition to the plant of the Evansville Packing Co., and it is expected that this job will be completed before bad weather sets in next winter. Mr. Andres says that he is not in the least discouraged over the building situation as he realizes we are living in war times when every man must do his full duty and therefore he is not complaining as he feels that business will be better some time in the future. A new high school building is being erected at Carmi, Ill., and the brick for this structure is being furnished by the West Salem Brick Co., at West Salem, Ill. Work has started on the new high and grade school at Lynnville, Ind., that will cost about $40,000. The building is expected to be completed in time for the opening of the school term this fall. Work has been started also on the new orphans' asylum at Carmi, Ill., this being one of eight buildings of the same kind to be built in that city. John Long has let the contract for the building of a brick additon to his bakery at Madisonville, Ky., the new building to be used as an ice cream factory. The new addition to the Keek-Gonnerman Machine Works at Mt. Vernon, Ind., has been completed, the brick for this addition having been furnished by the Standard Brick Manufacturing Co., of Evansville.

John Andres, of the Standard Brick Manufacturing Co., has been elected president of the Rotary Club for the ensuing year. He is a charter member of the Rotary Club and has been active in its affairs from the time of its inception. Mr. Andres is planning a number of new "stunts" for the club during the coming year.

The Hoosier Clay Products Co., of Hillsdale, Ind., has reduced its common stock from $150,000 to $60,000, and its preferred stock from $75,000 to $30,000.

A new school building to be erected at Charlestown, Ind., at a cost of $36,000, will be built with brick supplied by the Indiana state farm. The use of the brick was one of the conditions imposed by the State Council of Defense when the question of permitting the work to be done at this time was brought before that body. It is said the delay of four years in building, due to litigation by those opposed, will cost the taxpayers at Charlestown at least $15,000 in increased cost of material and labor.

The three large potteries at Evansville are being operated on fair time and in fact have been for the past several months. The prospects are that the factories will enjoy a brisk trade the balance of the season, considering the abnormal conditions caused by the war. The car shortage, freight embargoes and the labor shortage have of course figured in their working conditions during the past few months, but the manufacturers say that in spite of these handicaps they have pushed ahead and managed to keep busy. The labor problem is becoming more serious in Evansville since the United States opened a free employment bureau in that city. Manufacturers say there never was a time when they could remember when unskilled labor was so hard to get and when it commanded a higher price. In many instances laborers are making $3 and $4 a day where a few years ago $1.50 was considered a big price for ordinary laborers. It is not believed the situation will improve any until after the war, while on the other hand it is expected to get some worse from time to time. General trade conditions remain good in spite of the many abnormal conditions that the brick and clay manufacturers are facing from day to day. Collections are good and everybody seems to be prosperous in spite of high prices, etc. A HOOSIER.

LABOR FIGHTS IN SELF-DEFENSE.

The series of explosions and fires that have been wrecking American steamships, docks, factories, bridges, railway trains and grain elevators afford the American workingman a most practical reason why he should lend every ounce of strength and energy to the winning of the war against the military autocracy of the central empires. To him and his immediate interests this is a war of self-defense—a war against a system that contemplates his undoing.

"There is not a question in the world that the attempts to destroy American industries are a part of the German war propaganda," said a great labor leader recently, "and it should be the duty of American workingmen to aid their government in every possible way to wipe out this sort of propaganda. Every one knows that the kaiser's agents are busy in this nation with torch and dynamite, not only for the purpose of hampering war activities, but for the purpose of crippling industry in general. Purely in self-defense the American workingman must fight back to the best of his ability if his source of livelihood is to be preserved.

"Many of the loyal American workingmen have come from Europe within the last few years; many others are the sons of fathers and mothers who came to this country many years ago, either to improve their condition or to escape military persecution. America offers good wages and the privilege to work unhampered—good wages, plenty of work, liberal laws and equal opportunities to all. Moreover, there was no enforced military service in the United States until Prussian militarism threatened our very existence.

"Now that this country has set about to defeat the sinister purposes of Prussianism, the American workingman should realize that every dollar he lends to his Government brings nearer the day when European influence will no longer be able to make itself felt in this country by threatening the existence and liberty of labor in general.

"German money, as well as German influence, is being used in the work of destroying American property. German statesmen want the United States crippled industrially and they don't care whether the American workingman starves to death while they are crippling our industries. Liberty bonds offer the American workingman, not only a safe and profitable investment for himself, but a weapon to combat the unholy methods of the foreign slave drivers. American labor has done its part in aiding the Government at Washington in the past and it should be even more willing and ready to lend support in the future."

THE MANUFACTURE OF COMMON BRICK IN CHICAGO TO BE CONSOLIDATED UNDER ILLINOIS BRICK COMPANY

With the permission of the government, the Illinois Brick Company, of Chicago, has arranged with several other brick concerns in that city to produce their common brick for them in order to further the fuel conservation movement.

With its own activities, more than 90 per cent of all the common brick manufactured in Chicago will hereafter be produced by the Illinois Brick Company. It is believed this percentage may be increased to include the entire production of brick in Chicago.

This movement was undertaken by the company on the generally recognized theory that it is more economical to run a plant continuously in so far as the use of fuel is concerned than to run it intermittently.

Twofold Advantage

The plan is also thought to be of much advantage to both the government and the brick manufacturers by enabling the combined production to take up the slackening in operation which was bound to follow the fuel administration's recent order limiting the operations of common brick manufacturers to 50 per cent of their average production in the last three years.

Normally common brick production in Chicago approximates 1,000,000,000 brick a year, and the company will have little difficulty in producing all needed in Chicago or the surrounding territory.

In addition to combining the production end of the brick business in Chicago, arrangements have been made for consolidating sales forces.

AMERICA FIRST.

The Turnverein Club, of Joplin, Mo., has voted to disband forever and to give its property, valued at $25,000, to the American Red Cross Society. The words with which this organization has put itself on record ring with patriotism. They ought to be framed in the house of every foreign-born ciitzen:

"We must realize the vastness of the change of conditions. * * * It is a unique situation, but it is a surprisingly clear and plain situation. We left one country. Why? Because we were not satisfied with our conditions. We entered another country with the full knowledge (unless we were lunatics) that we had to abide by the rules and conditions imposed by this new country. The new country was very lenient with us. We hardly knew that we were being governed. To us this war comes like a bolt of lightning out of a clear sky. We are awakened from a dream, awakened to the realization that when we changed countries it was also our duty to change our sentiments and sympathies. The object of the Verein is to advance German customs, German habits, and the German language. This is, under the conditions which have arisen, intolerable and impossible. Our countrymen can not and will not and should not be expected to countenance the existence of our Verein."

This is 100 per cent Americanism.

Brick is the one universal building material that is both best and cheapest.

PREPARE FOR THE FUTURE

Now is The Time to Lay the Foundation on Which Future Work Will Be Builded And Clay Products Exploited in the Fashion Deserved.

WITH BUSINESS more or less restricted this year, manufacturers have an opportunity to study their situation and look forward to the future which they do not always have when they are busy in the regular course of their business. In the long run it doesn't matter much that some restrictions are encountered this year. That is but one season, and before another rolls around the disturbing Hun may be relegated to the background and lost in the debris resulting from the changes of an epoch-making period.

If it is impossible to do what we would like to do this year it would seem to be the part of wisdom to look forward to the time when what we want to do can be done, nay, more than that, will need to be done. And if in looking forward we attain to a condition of preparedness so much the better. Manufacturers in this line are no worse than those in other activities. They are all notoriously unprepared for contingencies. But all alike have an opportunity now to become acquainted with themselves and determine what is best to do for the further development of their business.

Two features of business are important now. First, is the mobilization of every atom of energy to win the war. But while that is in progress it will be to the advantage of everyone to pause occasionally and consider what is to be done after the war. Conditions will not be as they were before the war began. Old-time trade conditions and methods have been scrapped. All things will become new. The old order changeth, giving place to new, and this holds as good in this industry as in many others which have already gone far toward organization after the war production and distribution.

It is not likely that the brick industry will suffer from foreign competition. Few imports of this character of manufactured goods are probable, but the same changes in conducting business will be discovered in this country that apply to export and import trade, though the situation doesn't appear so plain in this industry as in some others at the moment.

The need of the industry now is a consolidation of all interests in a movement to develop its business along new lines and extend those already laid down. It is no longer possible to allow business to drift as it will, accepting orders if they come, but failing to exert the right kind of effort to obtain them. The indifferent attitude must be abandoned for a very aggressive campaign to be conducted along the lines developed as a result of the more general organization of industry.

The problem of sufficient houses for the population is becoming serious. While it is held in abeyance temporarily by the war and the necessity for concentrating on that, yet the time is approaching when they will be needed and must be built from some material.

What are brick men doing toward acquainting potential builders with the value of their material? Isn't here an opportunity to lay the foundation for a much larger business than has ever yet been done in brick? Isn't here the opening which will place manufacturers in the position of leaders?

It would seem as though the time to begin this effort is now. Not that it is essential to print display advertisements in the newspaper, though that would bring business, but it is essential to become thoroughly acquainted with the possibilities and make preparations to take full advantage of them. Indifference in face of such opportunities is little better than refusing to do what one might.

Unquestionably the demand to come will be for a better class of houses than has ever been erected before. And what material is more suitable for this purpose than burned clay products. Yet, fortunately, the knowledge of the people with respect to its qualities is meagre and the sales for this purpose are not nearly as large as they might be under improved conditions.

The housing question must be solved in the relatively near future. It is quite impossible to outline now the course this solution, when it is undertaken, will follow, but whatever it is the brickman ought to be prepared to play an important part in it. How many are now in position to do that?

While no one can say yet what general course will be followed in solving this housing problem, the need is so widespread and the opportunity for introducing and developing a large business in material is so obvious that the brickman should not hesitate a moment in beginning an agitation which will influence much business in his behalf. In other words, it would appear as though he might, in some degree, at least, force the fight on this point and develop a business which will be profitable and at the same time furnish a material that will fill an actual need.

Whether single cottages, as are promised for Paterson, N. J., long rows of single houses, as developed in Philadelphia, all of them concrete, modern apartments as are under consideration in Newark and Jersey City, N. J., and have been built in other cities, or modifications of these plans which have been introduced in such cities as Sandusky, Ohio, Bridge port, Conn., and many other cities where some means has had to be provided for the housing of additional workers, the brickman has a great deal at stake and needs to follow with closer attention to possibilities the proposed developments than he apparently has done in some of these localities.

As a rule cities object to building barracks for the homes of workers, as has been done in some entirely new towns, like Bristol, Pa., where a large shipbuilding plant has sprung up and has called in many thousands of workers where none was employed before. Perhaps operations of that character are only temporary and will be swept away after the war, but housing facilities to be erected in large cities are likely to be permanent and they will have to be carried out according to the building codes of those cities. Here is where the brick and clayman has a favorable opportunity. The fireproof requirements are important elements in this situation and the clayman has the advantage in that. He doesn't need to argue this point. Every building department in the country knows it.

He will have to demonstrate one other point, and that is beauty. Much complaint has been heard at different times because brick houses are said to be without architectural beauty. But if those who object to brick construction because of this will examine modern developments in this material they will see that a great advance has been made. The old-time bandbox house, with impossible decorative features, has passed and in its place has come a structure that unites beauty and utility. And the cost of these modern structures is less than the cost of the old ones, built on lines that would made the modern man shudder. These features must be understood, else the business will suffer worse than it has yet.

What better time than the present to undertake a campaign of this character and convince doubters that burned clay is the only material which combines all the qualities required in modern structures? If this is done the temporary dullness, enforced by conditions over which no one has control, can be made one of the most profitable periods the industry has ever known. Anything which will increase business, or which will make the material manufactured more favorably known to a large number of people, will go far toward accomplishing this object.

While this is only one feature of the business which can be profitably taken up under present conditions it is important since it touches a large number of people vitally. In other words, when you talk about the homes in which people are to live you come so close to them that they are at once interested. After that it shouldn't be hard to develop a friendliness toward your material which will lead to enhanced use and larger profits after the war is over.

By proper use of the present slack business era manufacturers can make it the most profitable time they have ever known. The expense need not be large. Perhaps that can be made a little stronger and one might say that it should not be large. But it should be sufficient to accomplish what is needed, else it will be thrown away and the effort will be lost. But these details can be easily worked out in a satisfactory manner. The principal point is the start, the appreciation of the opportunity created by the present conditions. The business can do effective war work and at the same time develop ideas which will benefit itself after the war closes.

Too many men in different industries have been stunned by the conditions created by the war and have failed to make the most of their opportunities for co-ordinating their own business and putting it upon a modern basis while orders are small. That is the time to prepare for the work ahead. And unless preparations are made now it will be quite impossible to take advantage of opportunitites later.

This is the situation which confronts the clay industry in all sections of the country, and many are not taking time to go about necessary work as energetically as they should. The thing is to get to work before the crush comes. Here and there one is doing this work and is preparing for additions to his business which he has faith to believe will be required, but where one is doing it scores are not, and these suggestions are merely to set them thinking along the new and more progressive lines. All must come to it sooner or later and the one who begins early will be the one to gain the greatest good from his efforts.

WILL ERECT ONLY BRICK DWELLINGS.

Single and double houses of brick construction will be the type of building erected by the Bridgeport Housing Company, Bridgeport, Conn., with the money secured in the recent $3,000,000 loan made by the government to Bridgeport.

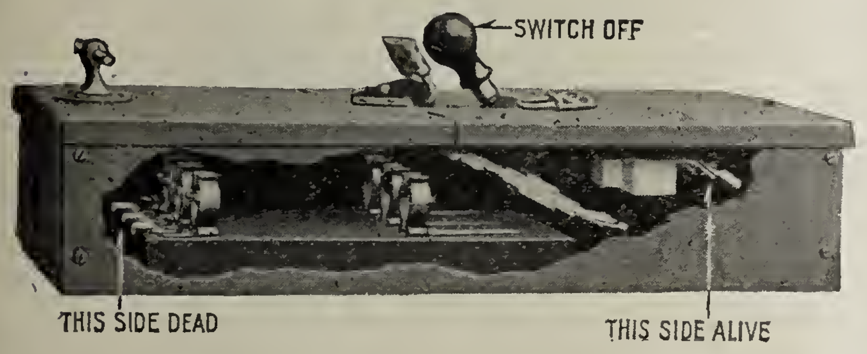
The Bridgeport Housing Company has received from the government a set of suggestions and specifications regarding the construction of the new dwellings. The government approves single and double houses of brick, and also allows the construction of six family buildings. No wooden houses can be built over two and one-half stories high.

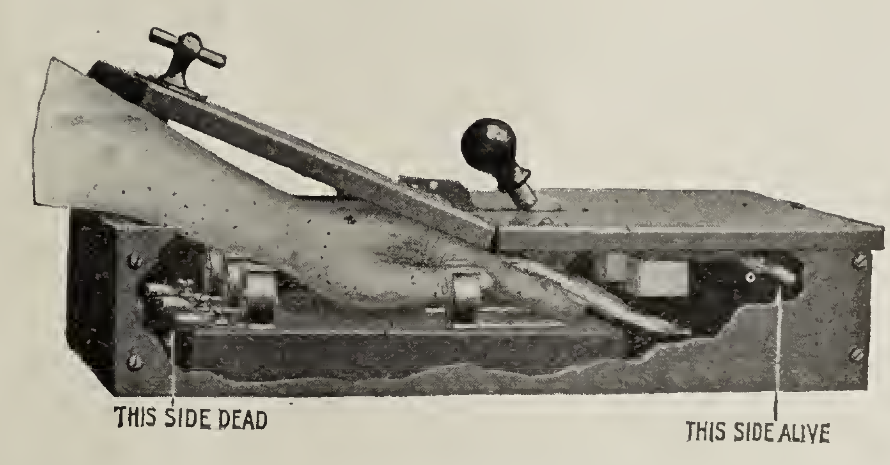
A SAFETY SWITCH.

In many steel mills, factories, mines and similar industries, where most of the workmen have little knowledge of electricity, it is desirable to use switches having no live parts exposed or accessible in the ordinary operation of the switches or when replacing fuses.

This is fully accomplished in the Krantz Auto-Lock Switch, marketed by the Westinghouse Electric & Mfg. Company, which is intended for use on main circuits or wherever an ordinary knife switch is applied. The switching parts and fuses are enclosed in a steel box, the cover of which is in two parts, one being screwed on to form a permanent covering for that end of the box containing the switch, and the other part being hinged so as to swing back and permit the renewal of fuses, which are located in this portion of the box. An ingenious latching mechanism makes it impossible to open the cover without first throwing the switch to the "off" position and rendering all fuses and other accessible parts dead. Thus fuses may be replaced at any time with absolute safety. As long as the door of the case is open, the switch contacts can not be closed.

By using a padlock, the switch handle can be locked in the "off" position, making it impossible for anyone to close the switch, except the person holding the key to the padlock. By using another padlock, the cover may be locked shut, so that the fuses cannot be tampered with. Either of these padlocks can be used independently of the other, so that the switch cover can be locked shut with the switch either "on" or "off," or the switch can be locked in the "off" position with the cover either locked or open.





Contact is made by means of a laminated spring copper brush, double ended with auxiliary arcing contacts at each end. The outer leaves of the brush are bronze to provide additional spring pressure.

The stationary contacts are of hand-drawn copper and are mounted on slate bases, one of which in the fused switch carries one of the fuse clips while the other forms the terminal block for the incoming line and is mounted under the stationary portion of the cover.

The operating mechanism is galvanized steel of the toggle type, and is attached to the under side of the stationary end of the cover. This mechanism can be easily removed for inspection by removing several screws.

In closing, the pressure between the contacts causes the laminations of the brush to spread apart, giving it a wiping or self-cleaning action.

The double-ended brushes provide a double break, dividing the arc between the two ends, each of which is provided with a separate arcing tip.

In the closed position the switch is held in positive contact by throwing a toggle over center. A spring provides a quick-break for opening, the mechanism being independent of the operating handle.

These switches are supplied for 250, 500 and 600 volt, for either alternating or direct-current service, and in capacities up to 2,000 amperes.

The safety features of this switch have been recognized by the American Museum of Safety, which has awarded it a gold medal and special mention.

BELTING SCARCE.

It seems that belting of all kinds is becoming scarce enough that the problem with machinery users before the war is over will not be so much what particular belting they will use as it will be what they can get. Some indication of the situation in the belting supply world may be had from a statement made by William B. Corell, of the International Belting Co. of New York, at the meeting of machinery and supply dealers, who said:

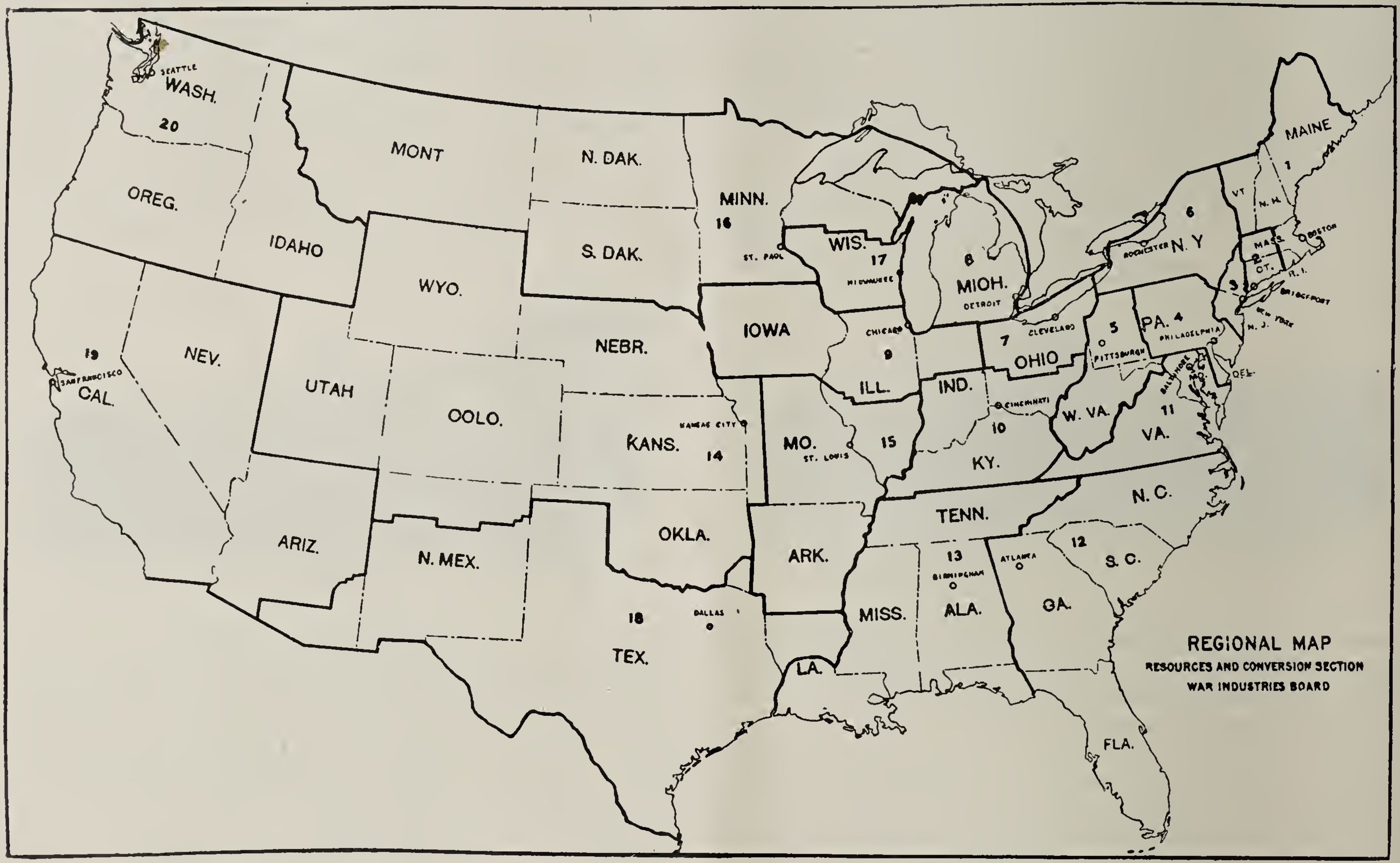
"It is no longer a question of what belting is the best, leather, rubber or duck. We must keep the wheels turning at any cost, and the manufacturer will do well to use any kind of belting he can get."

Belting prices of all kinds have advanced, perhaps leather more than anything else. But there is no class of belting which has not shown some advance. Meantime stocks on hand are being used up. Belting, like many other things needed these days, is going on the shortage list. This should mean taking better care of what belting is on hand, and ordering new belting ahead of the needs.

Those motor trucks maintaining a regular schedule of 20 miles an hour on the Lincoln Highway ought to be enough to make the railway cars making 30 miles a day wake up and get a hustle on themselves.

HOW CLAYWORKERS CAN HELP WIN THE WAR.

THE IMPRESSION prevails pretty generally that Clayworkers can play but a small part in war work. Perhaps it may develop that much more can be done along that line than has seemed probable. At any rate an opportunity is to be afforded for further development, a plan for coordinating the various industries of the nation having been suggested by the Chamber of Commerce of the United States. As will be seen by the accompanying map, the nation is divided into 20 zones, each to have a regional headquarters, and a director in chief, with whom representatives of the various industries are to confer with a view of the largest possible development of war-time industrial resources. The plan as fully set forth is as follows:



Regional Organization of Industry.

For the purpose of developing new industrial resources to meet the war demands of the government, and quickly to disclose additional means of increasing production, the War Industries Board has just established a Resources and Conversion Section. Mr. Charles A. Otis, of Cleveland, a former president of the Cleveland Chamber of Commerce, and a member of the board of directors of the Chamber of Commerce of the United States, has been appointed chief of this section.

To carry out the plans of the War Industries Board, it has been decided to divide the country into 20 regional groups and to organize each region through the commercial organizations within the region.

In each of these regions all types of industry represented in the membership of the business organizations and in addition all industries which may not be a part of such membership will be invited to co-operate.

Mr. Otis has selected one organization in each region to take the initiative in calling a general meeting and establishing a definite organization.

The general plan of establishing industrial zones supports the zone system established by the Chief of the Division of Production, of the Ordnance Department.

The purpose of this regional system is immediately to make a careful survey of every section of the country to determine what industries not now doing war work may be utilized for such work, and also to ascertain what industries already engaged on work for the government are able to take on additional contracts or increase their production of munitions and war supplies. The 20 regions determined upon are shown by the map printed herewith, and are as follows:

Zone 1, Henry I. Harriman, Pres. Chamber of Com., Boston, Mass.
Zone 2, Geo. E. Crawford, Pres. Chamber Com., Bridgeport, Conn.
Zone 3, Wm. F. Morgan, Pres. Merch. Ass'n., New York, N. Y.
Zone 4, Ernest T. Trigg, Pres. Chamber Com., Philadelphia, Pa.
Zone 5, Geo. S. Oliver, Pres. Chamber of Com., Pittsburgh, Pa.
Zone 6, Geo. A. Hollister, Pres. Chamber Com., Rochester, N. Y.
Zone 7, Myron T. Herrick, Pres. Chamber Com., Cleveland, Ohio.
Zone 8, Allen A. Templeton, Pres. Board of Com., Detroit, Mich.
Zone 9, Lucius Teter. Pres. Ass'n. of Commerce, Chicago, Ill.
Zone 10, A. Clifford Shinkle, Pres. Chamber Com., Cincinnati, Ohio.
Zone 11, Wm. H. Mathai, Pres. Merch. & Mfr. Assn., Baltimore, Md.
Zone 12, W. H. White, Jr., Pres. Chamber Com., Atlanta, Ga.
Zone 13, M. W. Bush, Pres. Chamber of Com., Birmingham, Ala.
Zone 14, Frank D. Crabbs, Pres. Chamber Com., Kansas City, Mo.
Zone 15, Jackson Johnson, Pres. Chamber Com., St. Louis, Mo.
Zone 16, D. R. Cotton, Chairman War Indus. Bd., St. Paul, Minn.
Zone 17, Aug. H. Vogel, Mil. Co. Council Defense, Milwaukee, Wis.
Zone 18, Louis Lipsitz, Pres. Chamber Com., Dallas, Texas.
Zone 19, Frederick H. Koster, Pres. Cham. Com.,San Francisco, Cal.
Zone 20, A. J. Rhodes, President Chamber of Commerce, Seattle.

In each region the organization selected by Mr. Otis will soon communicate with all the business organizations and industries not represented in organizations in its region and arrange for a general meeting at which the plan of organization will be taken up and perfected.

When the organization is completed it is expected that one man will be named in each region who will act as a direct representative of Mr. Otis in that region in the handling of business between the region and the section of which Mr. Otis is chief.

The regional organization is intended to supplement the work of the National War Service Committees of the industries, some of which are already effectively co-operating with the government, while others are in process of formation and will presently be prepared to offer their services to the War Industries Board. These committees were created under the suggestion of the Chamber of Commerce of the United States, and at the request of the Council of National Defense. Their special function is to deal with their respective industries on a national basis, preparing for the use of the government an accurate survey of the productive capacity of the industry with respect to war supplies, and to vouch for the ability of plants to produce the needed war materials, to assist the government in stabilizing prices, and to secure an equitable distribution of war orders throughout the industry.

Many industries are not so organized as to permit representation by a National War Service Committee, and in the development of the regional organization it is proposed to look after the requirements of these scattered industries and to provide a means by which greater impetus can be given to increasing production in every section of the country.

The advantage of this in preventing further dislocation of labor, new housing problems, unnecessary expansion of plants and freight congestion seems clear, as well as provide work for industries whose normal output already is being reduced steadily without the possibility of their resources being employed in new directions.

The important work which these regional organizations may perform in stimulating production of war materials and in the conversion of industry will be apparent to all business men and the War Service Executive Committee of the Chamber of Commerce of the United States urges the earnest cooperation of all business organizations in making its regional system as efficient as possible.

Members of the N. B. M. A. will be appointed in the various zones by President Clippert to represent the clay industries, with whom it is hoped their fellow workers will co-operate in any and every way possible that the clay industries may be able to render the largest possible measure of service. A full list will be published later.

MEETING OF THE AMERICAN SOCIETY FOR TESTING MATERIALS.

The twenty-first annual meeting of the above association will be held at the Traymore Hotel, Atlantic City, June 26 to 28, inclusive. A large attendance is anticipated and much important work awaits the delegates. Professor Albert V. Bleininger, secretary of Committee C-3, of special interest to brickmakers, has called a meeting Wednesday, June 26, at 2:00 p. m. He writes:

"The matters requiring attention are the report of Major Edward Orton dealing with a comprehensive series of mechanical and freezing tests (both by ice and sodium sulphate) made on a large number of brick, and action referring to the joint committee of Committees C-3 and D-4 relating to further study of tests on paving brick.

"The work of Major Orton has been completed and we have before us a report of the results obtained by him. He makes certain recommendations which require careful consideration."

MANUFACTURERS OF COMMON BUILDING BRICK ARE INVITED TO MEET IN CHICAGO JUNE 26.

In a letter signed by William Schlake, president of the Illinois Brick Company, manufacturers of common building brick throughout the country are invited to meet at the La-Salle Hotel, Chicago, 11:00 a. m., Wednesday, June 26, to form an organization for legislative and promotion work. Mr. Schlake's letter states that the new organization "WILL IN NO WAY CONFLICT WITH THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION." With that assurance, many of the members of the National Association will no doubt take an active interest in the proposed organization, for it is now generally recognized in the trade that there is need for co-operative effort along the line indicated.

As the readers of The Clay-Worker are aware, there already exists a publicity organization, namely, the National Building Brick Bureau, which was organized in 1915 for publicity and promotion purposes. It has done some good work, but its operations have been limited because of limited financial support. Perhaps the exigencies of the times will enable Mr. Schlake and his co-workers to overcome the difficulties which have heretofore confronted those interested in such efforts. It is to be hoped such will prove the case.

WESTINGHOUSE PITTSBURGH SERVICE DEPARTMENT MOVES.

The Pittsburgh Service Department of the Westinghouse Electric & Manufacturing Company has moved from its former location on Amberson avenue, to new quarters at 6905 Susquehanna street, in the Homewood district of Pittsburgh. Express and freight should be consigned to East Liberty, Pa., via P. R. R.

The Automobile Equipment service department has also moved to the new location.

MIDSUMMER MEETING OF THE AMERICAN CERAMIC SOCIETY

To Be Held At Zanesville, Ohio, June 25, 26, 27 and 28.

The following announcement in regard to the Midsummer meeting of the American Ceramic Society has been mailed to the members by Forest K. Pence, of the American Encaustic Tiling Company, Zanesville, Ohio, chairman of the committee on arrangements. The other members of the committee are C. D. Fraunfelter, Ohio Pottery Co., Zanesville, Ohio; R. D. Landrum, Harshaw, Fuller & Goodwin Co., Cleveland; Ellsworth Ogden, Buckeye Steel Castings Co., Columbus, Ohio; John W. Sanders, United States Stamping Co., Moundsville, W. Va., and Charles W. Berry, Laclede-Christy Clay Products Co., St. Louis.

The annual summer meeting of the society will be held at Zanesville, Ohio, beginning Tuesday morning, June 25th, and concluding Friday evening, June 28th. For various reasons the committee placed the dates of the meeting somewhat earlier than usual and it is hoped that the normally pleasant weather of this season may add to the enjoyment of the occasion.

The Zanesville district affords a great diversity of clay industry, including some of the most notable plants in the country. The industries are favored by the extensive local occurrences of raw materials and the latest modern developments are found in the factory installations.

The region is famed for its scenic beauty with which is blended opportunities for most interesting geological and archaeological observations. Plans for the enjoyment of these features have not been overlooked, and the meeting should be one of unusual pleasure and profit to the membership.

Tuesday, June 25

The members will meet at the Hotel Rogge, Market and Third street, at 9:30 a. m.

The first day will be spent in visiting the plants of the Brighton section of the city. Here are located the factories of the Brush-McCoy Pottery Co., manufacturers of pottery specialties, the J. B. Owens Floor & Wall Tile Co., where two tunnel kilns are under construction, the Ohio Pottery Co., manufacturers of chemical porcelain, and the Mosaic Tile Co., where tunnel kilns are in operation for both bisque and glost ware. These plants will be visited in the order named.

In the evening there will be an informal get-together meeting with the Central Ohio Section in the Chamber of Commerce rooms.

Wednesday, June 26

The party will leave the hotel at 9 a. m., for the Roseville Pottery, where a tunnel kiln is in operation in the manufacture of art pottery and cooking ware. The members will then proceed to the plant of the American Encaustic Tiling Co., largest manufacturers of floor and wall tile in the world. Two tunnel kilns are here included in the factory equipment.

The members will meet at the hotel promptly at 2 p. m., and proceed to the pier of the Muskingum Valley Transportation Co., whose excursion steamer Louise has been chartered for a trip on the beautiful Muskingum, the Hudson of the West. The boat will proceed as far as the Barracks, the home of the famous artist, Howard Chandler Christy. Here the party will leave the boat and climb the hill for an informal call on the artist. Dinner will be served on the boat during the return trip.

After arriving in Zanesville at about 8:30 p. m., the plant of the Kearns Gorsuch Glass Co., will be visited, where modern glass blowing machinery is installed for manufacture of bottles of all kinds.

Thursday, June 27

The members will leave the hotel at 9:00 a. m., for the plants of the Burton Townsend Co., one of the largest manufacturers of paving brick in the country. This company is furnishing paving brick for the completion of the paving of the National Highway which is now being used for the transportation of army trucks to the seaboard. On one of the company's adjacent properties, there is also a modern moulding sand plant, an industry of vital importance for which this district is noted.

In the afternoon the members will leave the hotel at 1 p. m. and proceed by auto west on the historic National Highway, passing road houses and other structures dating back to stagecoach days. The party will leave the highway at Brownsville for a stop at the famous flint ridge formation. This district is famous geologically the world over, being an immense deposit of amorphous flint extending for several miles. It once afforded the American Indian his most extensive flint quarries for the forming of arrows, hatchets, and other implements. It is not difficult to discover specimens of this early craft on the grounds. From here the party will proceed to the vicinity of Newark where some of the most notable examples of the mound builders' operations in existence are to be observed.

Returning, the members will stop at Buckeye Lake Resort, Central Ohio's playground, where dinner will be served and opportunity to enjoy the amusement features afforded.

Friday, June 28.

The last day of the meeting will be spent in visiting a variety of industries in adjacent towns. Taking the trolley one square from the hotel at 8 a. m. the first stop will be at the Ransbottom Bros. stoneware plant, Roseville. This plant has a capacity of over ten cars of stoneware per day. In this same vicinity is located the modern factory of the Nelson W. McCoy Sanitary and Stoneware Pottery Co., at which visiting members will be welcomed.

The next stop will be at Crooksville, a center for manufacture of china and high grade table ware. Representative plants of this district are those of the Crooksville China Co. and the A. E. Hull Pottery Co. These will be visited as time permits.

After dinner the party will leave Crooksville at 1:10 p. m. over the Pennsylvania lines for New Lexington. Here the members will visit the well-known plant of the Ludowici-Celadon Co., the country's most extensive manufacturers of roofing tile. Producer gas fired continuous kilns of the Chamber type are in use and factory installation is highly modern throughout.

From here the party will proceed to the factory of the Ohio Brick & Stone Co., where recent developments in the process of manufacturing No. 1 fire brick, may be observed.

The members will leave New Lexington at 8 p. m. over the Pennsylvania for Zanesville, where they will disband.

A large crowd is expected.

Hotel Accommodations.

The headquarters of the members of the society will be at the Hotel Rogge, which offers accommodations on either the American or European plan.

Rates for the latter are $1.50 per day, without bath, and $2.00 per day with bath. In order to insure the desired accommodations at hotel headquarters, members should notify Mr. Pence as early as possible.

CERAMIC CONFERENCE HELD IN PITTSBURG

Representatives of Various Technical Organizations Meet to Consider Ways and Means of Placing The Nation's Silicate Resources on a War Basis.

A MOST important conference was held at the Bureau of Standards Laboratory in Pittsburgh, May 24 and 25, 1918, between the Committee on Ceramic Chemistry of the National Research Council and representatives from the American Association of State Geologists, the United States Geological Survey, the United States Bureau of Standards, the United States Bureau of Mines, the American Ceramic Society, the Division of Geology and Geography of the National Research Council.

The representatives present at the conference were: E. W. Washburn, of the Department of Ceramic Engineering of the University of Illinois, chairman of the Committee on Ceramic Chemistry of the National Research Council; A. V. Bleininger, ceramic chemist of the United States Bureau of Standards, member of the Committee on Ceramic Chemistry of the National Research Council; L. E. Barringer, insulation engineer for the General Electric Company, member of the Committee on Ceramic Chemistry of the National Research Council; Frank W. DeWolf of the State Geological Survey of Illinois, president of the American Association of State Geologists and representative for the Division of Geology and Geography of the National Research Council; Heinrich Ries, of the department of Economic Geology of Cornell University, representing the United States Geological Survey; R. T. Stull, representing the United States Bureau of Mines; Homer F. Staley, of the department of Ceramic Engineering of Iowa State College, president of and representative for the American Ceramic Society; C. W. Parmelee, of the department of Ceramic Engineering of the University of Illinois, representing the Illinois State Geological Survey; George H. Brown, of the department of Ceramics of Rutgers College, chairman of the American Ceramic Society's Committee on the Preliminary Testing of Clays, representing the State Geological Survey of New Jersey; Arthur S. Watts, of the department of Ceramic Engineering of Ohio State University, editor of the American Ceramic Society's Directory of Producers and Dealers in Ceramic Raw Materials; F. L. Aurin, representing the Oklahoma State Geological Survey; S. L. Galpin, representing the State Geological Survey of Iowa; R. H. Hice, representing the State Geological Survey of Pennsylvania; Henry Layton, representing the State Geological Survey of Pennsylvania; R. C. Moore, representing the State Geological Survey of Pennsylvania; Wilbur Nelson, representing the State Geological Survey of Tennessee; W. A. Price, representing the State Geological Survey of West Virginia; E. P. Schoch, representing the State Geological Survey of Texas; R. A. Smith, representing the State Geological Survey of Michigan; Wilber Stout, representing the State Geological Survey of Ohio.

Mr. E. W. Washburn, chairman of the Committee on Ceramic Chemistry, read the following report:

STATEMENT OF THE CHAIRMAN OF THE COMMITTEE ON CERAMIC CHEMISTRY.

Gentlemen—In its report of April 1, 1918, the Committee on Ceramic Chemistry outlined a plan for an economic survey of the ceramic raw materials of the country. The plan proposed involved a co-operation of state and federal agencies in conducting the proposed survey and contemplated action by Congress in order to provide the necessary funds. This report of the committee was brought to the attention of the American Association of State Geologists, and that association volunteered to inaugurate survey work along the lines proposed, in so far as the resources of the several state surveys would permit and without the delay which would be involved in waiting for Congressional action. In pursuance of this patriotic stand of the American Association of State Geologists, the present conference has been called in order to perfect arrangements for the immediate inauguration of the proposed work in a uniform manner throughout the several states which have undertaken to cooperate therein.

The Committee on Ceramic Chemistry, assisted by representatives from the United States Geological Survey, the United States Bureau of Mines, the United States Bureau of Standards and the American Ceramic Society, has been meeting during the last two days in order to prepare a definite outline of work for presentation to this conference. The results of the labors of this committee will be presented in four parts:

I. Recommendations concerning the collection and disposal of samples of ceramic materials other than clay.

II. A report from the sub-committee on the establishment of testing stations.

III. Recommendations concerning the preparation of standard and uniform methods of testing.

IV. Report of the sub-committee on the field sampling of clays.

It is one of the duties of the National Research Council to promote research in all branches of knowledge and to assist in the inauguration of new and important research projects. It is not, however, within the province of the committees of this council to assume the management or direction of such research projects, and it will therefore be necessary for the American Association of State Geologists to organize in such a way as to insure the efficient continuation of the survey work which will be inaugurated as a result of the present conference. Although the Committee on Ceramic Chemistry will at all times be glad to give any assistance in its power to the work of the proposed survey, its official connection therewith will cease at the adjournment of this conference and the responsibility for the prosecution of the work must then rest with the American Association of State Geologists. The Committee on Ceramic Chemistry suggests to the association that it set up the following standing committees which shall have supervision of the corresponding phases of the work:

1. A committee on testing stations and the distribution of samples for testing.
2. A committee on standard methods of testing.
3. An advisory committee such as that referred to on page 5 of the report of the Committee on Ceramic Chemistry.
4. A committee on legislation and public information whose duty it shall be to secure the necessary legislation, both by Congress and by the state legislatures, to insure the proper development of the work, to scure adequate financial support, to educate the public to appreciate the importance of an exact knowledge of the country's resources in raw materials, and to secure the establishment of geological surveys by states which at present possess no such agency.

I. Recommedations Concerning the Collection and Disposal of Samples of Ceramic Raw Materials Other Than Clays.

The committee understands that the War Minerals Bill now before Congress will provide certain funds which are to be used in part for survey and testing work on some of the materials listed on page 7 of the report of the Committee on Ceramic Chemistry. These funds will probably be expended, in part at least, under the direction of the United States Bureau of Mines, and the committee recommends in all cases where state surveys undertake work on any of these materials that this work shall be carried out in close cooperation with the above bureau. The committee, therefore, decided to make no recommendations concerning field methods or testing in the case of these materials but will merely indicate the relative importance of some of the materials and the present need of the discovery of new deposits. In each case mentioned below a recommendation is also made as to a laboratory where the necessary testing work on these materials can be taken care of. Before samples of the materials are sent to any of the laboratories indicated, however, arrangements should in each case be made in advance and instructions concerning size and material of sample, method of shipping, etc., should be obtained.

Further information concerning the uses and known deposits of

(Continued on page 790.)

NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.

THE REGULAR quarterly meeting of the board of directors of the National Paving Brick Manufacturers' Association was held at the headquarters of the Association in Cleveland, Ohio, May 31, 1918.

Election of the board of governors and alternates of the National Paving Brick Manufacturers' Association from the several territories and the adoption of the constitutional amendments were duly certified, namely:

Representing Illinois—The Illinois Paving Brick Publicity Bureau. Embracing the territory of Illinois and Missouri. Board member, C. C. Barr. Alternate, W. G. D. Orr.

Representing Indiana—The Indiana Paving Brick Publicity Bureau. Embracing the territory of the state of Indiana. Board member, Walker W. Winslow. Alternate, H. C. Adams.

Representing Ohio—The Ohio Paving Brick Manufacturers' Association. Embracing the territory of Ohio, West Virginia and Michigan and that part of Canada lying north and east of the Great Lakes. Board Member, C. C. Blair. Alternate, F. L. Manning.

Representing the South—The Southern Paving Brick Manufacturers' Association. Embracing territory east of the Mississippi river and south of Maryland, West Virginia and the Ohio river. Board member, W. M. Lasley. Alternate, B. A. Inglis.

Representing the West—The Western Paving Brick Manufacturers' Association. Embracing the territory west of the Mississippi river to the continental divide, including all of the state of Minnesota and that part of Canada lying west of the Great Lakes. Board member, A. W. Shulthis. Alternate, G. E. Mosher.

Election of Officers.

The board of governors organized by the election of:

President—C. C. Blair, Canton, Ohio.

Vice-President—Will P. Blair, Cleveland, Ohio.

Chairman of the Board—A. W. Shulthis, Independence, Kans.

Secretary—Walker W. Winslow, Indianapolis, Ind.

Assistant Secretary—Maurice B. Greenough, Cleveland, O.

Treasurer—C. C. Barr, Streator, Ill.

The principal matters of interest discussed at the meeting were the recent orders of the U. S. Fuel Administration, the recent car service rules, and the order increasing freight rates. These subjects were referred to the War Service and Traffic Committees, respectively, who will advise as to the course to pursue in these matters.

Standing Committees.

Advertising Committee—Walker W. Winslow, chairman.

Traffic Committee—J. G. Barbour, chairman.

Membership Committee—S. M. Duty, chairman.

Technical Investigating Committee—Will P. Blair, chairman.

War Service Committee—C. C. Blair, chairman; W. P. Blair, John W. Sibley, W. H. Terwilliger, A. W. Shulthis, R. T. Hutchins, Walker W. Winslow.

FEDERAL HIGHWAY MAINTENANCE.

Will it be put up to the government to take over and operate a series of highways for motor truck travel as well as the railways of the country to handle the transportation needs of the day?

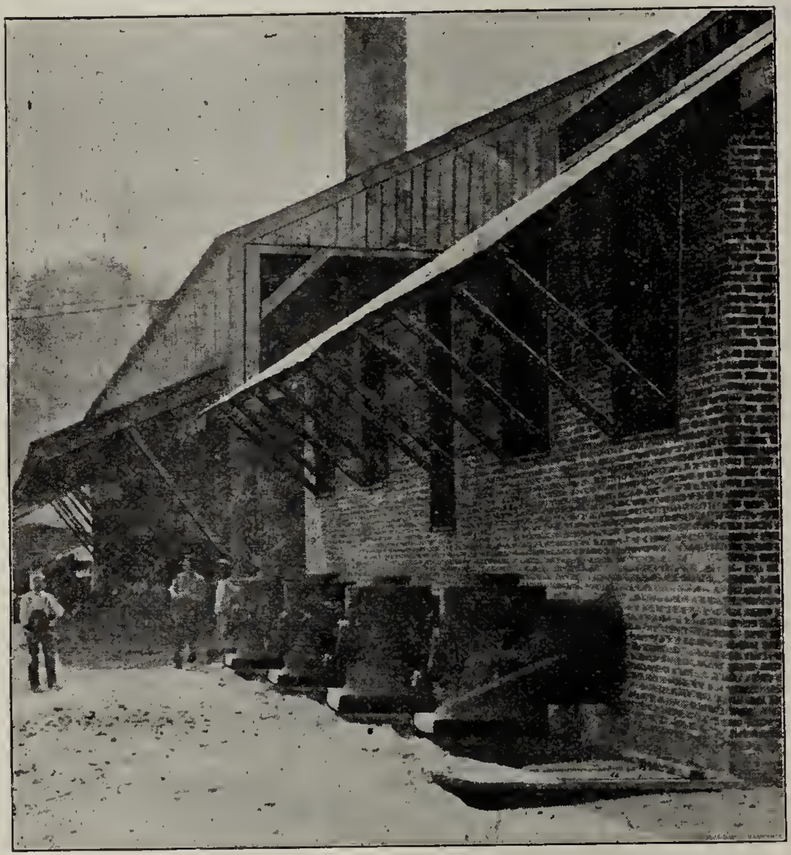
There was a bill introduced into the United States Senate by Senator Smith of Maryland which has been heartily indorsed by Senator Penrose of Pennsylvania, providing for the designation by the Secretary of War of certain highways for military purposes and appropriating twenty million dollars for their maintenance.

We have had a fair share of federal aid during normal times in promoting good roads, and it would only be a step further for the government to establish during the war control over certain main highways which would carry with it responsibility for their maintenance. This would be in keeping with government control of the railroads, and it might help the good roads matters along some.

PRODUCER GAS AND PERIODICAL KILNS.

IT WILL NO doubt be of interest to clayworkers in geneарl to know that the International Clay Machinery Co. of Dayton, Ohio, is now in a position to adapt producer gas to the burning of periodic downdraft and updraft kilns.

It will be remembered that International and their predecessors were the first to apply producer gas to the drying and burning of clay wares, and their gas fired dryers and continuous kilns are now in operation on many of the largest clay plants on the continent.



International Installation Four Producers Showing Downtakes to Gas Flue.

The economic features embodied in gas fired continuous kilns are well known, and savings from 50 to 75 per cent. of fuel and labor due to their use are common, so that in the erection of a new plant, this type of kiln is undoubtedly the best investment.

But few of the clay plants already in operation can afford the loss in time and the added expense to erect a continuous kiln to supplant their present periodic kilns. Furthermore, the call for producer gas for periodic kilns was so persistent that International decided to enter the field.

In doing this International was fortunate in obtaining the services of Mr. George C. F. Vater, one of the foremost combustion engineers in the country, a man who has specialized in producer gas for clayworking purposes.

The advantages of producer gas are well known. There is first of all better control, as the temperature can be regulated in any part of the kiln by the simple manipulation of a valve. This, of course, means less checked and overburned ware.

Gas gives a long flame, which reaches to all parts of the kiln, thus insuring an even burn throughout.

There is freedom from the ash deposit within the chamber, also a good command of the color of the ware, as the gas and the air supply can be separately and easily regulated.

But what will probably interest clayworkers most at this time is the economy in fuel and labor, it having been shown in the past that the saving in fuel over direct firing ranges from 25 per cent. upwards, due to the shortening of the burning period, which, of course, also means a more rapid turnover and a consequent increase in the yearly capacity of each kiln.

An average saving of from 25 to 50 per cent. of the burning labor can be figured on, as all of the coal and ashes are handled at one point, that is, the producers.

A new type of burner has been brought out, one of excellent design—the salient features of which are absolute control of the air and gas, and a simple and quick adjustment for a short or long flame.

International advises that numerous inquiries regarding this new field show how great the demand is for a means that will cut operating costs, and that it seems to be only a question of time before producer gas will become the common means of drying and burning clay wares.

CO-OPERATIVE PREPAREDNESS.

We are indebted to D. H. Nicholls, Managing Director of the Allied Publicity Bureau, Cleveland, Ohio, for an invitation to participate in a conference of manufacturers and publishers to consider up-to-date ideas of co-operative preparedness; meaning the getting together of the producer and the publicist, to consider ways and means of meeting the unusual conditions that now exist in the industrial world.

The conference began with a noon day luncheon, June 17, at the University Club, Chicago. There were present representatives of the American International Corporation, the Allied Machinery Corp., the Lakewood Engineering Co., the Thew Automatic Shovel Co., the Barber-Green Co., the Western Wheeled Scraper Co., the Austin Mfg. Co., and a number of other equally well known manufacturers. The trade press was represented by the editors and publishers of the leading trade journals. Various important subjects of common interest to manufacturers and publishers were discussed, the chief purpose of the meeting being to encourage greater co-operation between producer and consumer, which according to the program, "Builds efficiency, reduces cost, spells victory 'over-there'."

The proceedings were most interesting and were followed by a tour of inspection of the plants of the manufacturers represented. The itinerary provided for the inspection of Chicago plants on the 18th, and the Barber-Green plant at Aurora, on the 19th. The party was scheduled to spend Thursday and Friday in Milwaukee; Saturday in Duluth; Sunday in Colfax Springs; Monday at Newton, Iowa; Tuesday in Chicago, and Wednesday and Thursday, June 26 and 27, at Cleveland and Lorain, Ohio.

Such an elaborate schedule is an unusual combination of business and pleasure and must inevitably result beneficially to all participants. At least that was the earnest wish of the promoters. The Clay-Worker hopes to chronicle the chief events of the trip and to reprint some of the interesting papers presented, in a subsequent issue.

STANDARDS FOR CATALOGS.

There was a national conference on catalogs held recently at Chicago composed of purchasing agents, representatives of the paper and printing trades and of manufacturing interests turning out catalogs, which took some action in the matter of standardizing catalogs by passing the following resolution:

"**Resolved**, That catalogs be standardized to 6 by 9 or 7½ by 10⅝ or 8 by 11 inches; also resolved that we recommend for catalogs the manufacture of paper sheets ranging as follows: 25 by 38, 32 by 44, and 33 by 46 inches, with their double sizes; that we also indorse the weights of 40, 45, 50, 60, 70 and 80 pounds on the basis of 25 by 38, and that colors be limited to white and natural."

The standardization committee on the National Association of Purchasing Agents recommends that all catalogs meant for the use of purchasing agents be 7½ by 10⅝ inches.

THE MINTER SYSTEM OF BURNING BRICK AND TILE.

COAL IS A MUCH MORE important commodity these war-times than it has ever been before in America. Hence it behooves clayworkers who use large quantities of coal to economize in every way possible. As will be seen by their ad on page 793 of this issue the Flint River Brick Company, of Albany, Ga., has found the Minter System of burning a vast improvement over the old way of burning.

The "Minter System" was conceived and perfected by Mr. M. M. Minter, at the yard of the Flint River Brick Company, where he has been actively in charge of all phases of making brick for the last six years. Convinced by his experience at this plant and at others that periodical round down-draft kilns, properly built, are in a class by themselves for durability, control during burning and quality of products, he decided to overcome if possible the high cost of burning, which is their chief drawback. This type of kiln is used to burn almost every kind of ware known to the clay industry, and on an average produces the largest percentage of good burns of any other kiln in use.

There were two problems to be overcome in order to make this type of kiln efficient in addition to its other very desirable qualities. The first of these was the distribution of heat in each kiln and from kiln to kiln in succession. The second, almost as important, was the keeping away from the kilns any moisture.

The first of these problems was solved by a system of underground flues connecting ,all the kilns, each with the other, with dampers placed at proper places, so that any kiln or set of kilns could be connected with any others. The transferring of heat from a burning kiln or one that is cooling is effected by means of a fan. Our experience has shown heat from a burning kiln can be utilized to bring up the temperature of a green kiln, evenly on all sides, to more than 1,000 degrees.

The second problem of drainage was solved by paving all the ground around the kilns and employing a centrifugal pump to carry off whatever water might stand in low places.

The Flint River Brick Company installed the "Minter System" on 10 of their round down-draft kilns over 18 months ago, and since that time has burned 10,000,000 to 12,000,000 brick with it. They have been known to get their cones to start over in 48 hours after the first application of fuel to the kiln, whereas, before the installation of this system the average time for this was 6 to 8 days. These 10 kilns with one night and one day burner have turned out since they were changed as many burned brick as the 16 kilns did before with twice the number of burners. Time and time again, when not hampered by lack of fuel, the 10 kilns have been burned in 30 days. The material here is quite variable and in many cases it is necessary, to get proper burns, to run the heat up 12 to 18 hours after the cones are down. This probably means a temperature of 2,500 degrees. The character of the burned brick are as a whole better than before, and show no scumming or other bad effects sometimes found in continuous kilns of other types.

If desired, this system can be adapted so that the waste heat can be used for drying, thus utilizing further every bit of heat in a pound of fuel.

LATIN AMERICAN PROSPECTS IN CLAY-WORKING MACHINERY.

A special consular review of Latin American markets for brickmaking machinery indicates among other things that active exploitation on the part of the cement industry has borne good fruit among our neighboring countries to the south. This is interesting as showing exploitation, and it is worth taking note of as a reminder to clay machinery people that if they were to promote business they must get after it, and keep after it.

For example, the report starts off with a brief from British Guiana, written from Georgetown, which says that the principal building materials used there are wood, iron, galvanized sheets and reinforced concrete. Brick is used for foundation work, chimney, and setting steam boilers, but the report says there are not half a dozen brick buildings in the colony and no brick being manufactured locally. A few years ago there were one or two small plants engaged in brickmaking, but they turned out a low grade product and brickmaking is practically a thing of the past.

Where Concrete Plays a Part.

Right after this, to drive home the thought of concrete and cement exploitation, is a report from Consul William L. Avery, at Belize, British Honduras, who says that the demand for brick for building purposes in British Honduras has almost reached the vanishing point since concrete has come into prominent use. He says no brick building has been erected there since 1898. In the so-called fireproof buildings cement and concrete have been used, although at that such buildings are few and the towns being built mainly of wood and the use of brick is confined to foundation work. So he thinks there is nothing to indicate much opportunity for developing a market for brick machinery.

Something of the same discouraging note comes from Costa Rica, where the trouble is largely one of earthquakes. The report tells of two brick factories in Costa Rica, the larger plant which sold from two to two and a half million brick ten years ago now sells less than a million, and business with the other plant has declined since the earthquake. Buildings are now made either of wood or of reinforced concrete. Brick is being used some for foundations and for walls and sidewalks.

There are some hand yards near which supply the brick needed, the largest of which employs twenty men and boys and has a capacity of from 50,000 to 60,000.

The Outlook in Cuba.

From Cuba the report sounds better. There seems to be quite an interest now in the subject of brick buildings and in the development of brickmaking as a domestic industry. Portland cement is used somewhat but there is an interest in brick which has resulted in some good sales of brick machinery to Cuba during the past year. There are some hand plants in Cuba but the people of Cuba are taking to machinery right along, partly because of the scarcity of labor. Here and there some difficulty is encountered through lack of understanding the clay and the exact needs of the machinery, but in the course of time this will be cleared away and Cuba should furnish a fruitful field for the selling of clayworking machinery for brick, tile, flower pots, also sewer pipe. We are told, too, that competition with foreign brickmaking machinery is not to be feared as the American brickmaking machinery is simpler, cheaper and more satisfactory.

Jamaica Needs "Gingering" Up.

Consul Chas. L. Latham, reporting from Kingston, Jamaica, says that before the great earthquake of 1907, which destroyed practically every building in Kingston, brick occupied a foremost place in building construction. Since then, concrete has taken its place to quite an extent, but gradually people are turning back to brick again, evidently because the brick makes an artistic appeal. He says the use of brick has increased in public works and buildings and some experiments with brick for paving have been made which may bring results some day.

He says the entire brick-making industry of Jamaica is in the hands of the Colonial government, a condition caused by the employment of a large number of the inmates of the state penitentiary in brick work.

WAR INDUSTRIES BOARD CONSIDERS ADVANTAGES OF BRICK FOR NEW HOUSING OPERATIONS.

A CONFERENCE, called by Richard L. Humphrey, chief of the production division of the War Industries Board, was held in Washington on May 31, for the purpose of considering the merits of the various building materials for use in carrying out the government's extensive housing plans, both in the national capital and at various other points.

The Washington representative of "The Clay-Worker" was informed at the offices of the War Industries Board that all available materials were thoroughly discussed from every angle, and that there seemed to be a general sentiment for the use of brick, the principal and only objection to its use being that brick construction requires considerably more time than the use of either wood or reinforced concrete. There appeared to be no special objection to the use of brick on the ground of its higher cost, all agreeing that the superiority of brick construction more than outweighed the additional initial cost. As the matter of time is largely a factor in the War Industries Board's housing plans it was decided to give the subject some further consideration before a definite decision is reached.

Inquiry at the offices of the Department of Labor's Bureau of Industrial Housing elicits the information that brick is preferred for its housing operations where it can be obtained under proper conditions.

"Our plans contemplate the use of locally available material, brick preferred," said an officer of the bureau to "The Clay-Worker's" representative, "although it is altogether likely that contracts will be made for brick in accordance with information given the War Industries Board production division at its conference last week. In fact, our plans dovetail largely into the work of the production division, as will readily be seen. Much, of course, depends upon the immediate availability of brick. If the manufacturers can place at the disposal of the housing bureau the brick required for government purposes it is entirely likely that that will be the material adopted to a large extent. Up to this time no contracts have been given, as we are awaiting the President's approval of the bill. Once we get the word to go ahead the most available material, provided it meets the specifications established in the published standards of the bureau, will be decided upon, as the matter of time is a very important factor.

"I suggest that your brick manufacturers secure a copy of the 'Standards Recommended for Permanent Industrial Housing.' This can be had by addressing the Department of Labor Bureau of Industrial Housing and Transportation, Union Building, Washington, D. C."

Not only has the price of lumber gone skyward but the cost of yarding and handling has increased so that we are getting to the point where it will be cheaper as well as better to build with brick.

OBITUARY.

Harry S. Fate Answers the Final Summons At the Age of 43.

For the third time in two years we are called upon to chronicle the death of a member of the firm of the J. D. Fate Co., Plymouth, Ohio, Harry S. Fate. The summons came Sunday, May 26th, wholly unexpectedly and was due, we presume, to heart trouble. Following the death of his brother, Harley H. Fate (which remarkable to relate, occurred just two years before, almost to a day), "Harry" became president of the company and directed its affairs very ably up to the day of his demise. Harry Fate was a quiet, unobstrusive man, but very kindly and considerate to all with whom he was associated, so his death is mourned as a personal loss by almost the entire populace of Plymouth, where he has resided since he was six years old. He was born at Crestline, Ohio, February 18, 1875. His whole business career was associated with the manufacture of clayworking machinery and industrial locomotives.

As a mark of respect to his memory, all business was suspended in Plymouth during the funeral service, which occurred Wednesday afternoon. There was in attendance a large number of people from other cities, as well as a majority of the residents of Plymouth.

The Late Harry S. Fate.

God measures not life by years,
Nor by sorrows, nor sighs, nor tears;
He measures by motives and purpose of heart,
By sacrifice, mercy, and love, till we part,
From this life to be with Him.
Then, what meaneth our years few or many?
Eternity then.

CHICAGO CERAMISTS HOLD MEETING.

The Chicago Section of the American Ceramic Society held a very interesting meeting on May 18, at the Fort Dearborn Hotel, Chicago. There were about twenty members present, and some very interesting talks and discussions took place, including a paper by Mr. Joseph K. Moore on Graphical Methods of Showing Manufacturing Facts, and a paper by Mr. Barney S. Radcliffe on Burning with Forced Draft, and a talk by Dr. E. W. Washburn dealing with the ceramic activities in connection with the prosecution of the war.

The society entertained as its guest of honor Mr. Louis H. Sullivan, architect, of Chicago. Mr. Sullivan made a very interesting talk on the Development of the Use of Architectural Terra Cotta in Architecture.

The next meeting of the section will probably be held in September.

ORGANIZE BODY TO PROMOTE PURCHASE OF WAR MATERIALS.

Manufacturers representing the hollow building tile and brick industries of Chicago have organized a special bureau to promote the purchase of these materials for war construction. E. R. Sturtevant, secretary of the Hollow Building Tile Association of Chicago, will be in active charge of the work. A tentative price of $6.10 a ton has recently been placed on hollow tile for government work by the federal trade commission. The sale of common brick made in Chicago and other western cities will also be pushed. The price of common brick recently has been increased from $9 per thousand to $12, in order to take care of the steadily increasing costs of manufacture and yard operation.

REORGANIZATION OF THE J. D. FATE COMPANY

Owing to the death of Harry S. Fate, the president of the J. D. Fate Company, Plymouth, Ohio, the directors have found it necessary to reorganize their working force. Mr. John A. Root, of Plymouth ,a brother-in-law of the late H. H. Fate, was elected president, and will serve as general manager, while Mr. Chas. E. Heath will serve as vice-president. Mr. H. R. Sykes will continue as secretary-treasurer, a position which he has filled with conspicuous success for several years past. Mr. H. J. Votaw, who has been associated with the J. D. Fate Company for a number of years, was elected a director and will give his entire time and service to the business. Neither of the new officials of the firm, Messrs. Root and Heath are newcomers in the clay machinery business. On the contrary Mr. Root is thoroughly familiar with it, having been a director of the J. D. Fate Company for the past 15 years, and in addition they have for several years operated a plant in the same neighborhood as that of the J. D. Fate Company, and so are intimately acquainted with the generalities of the business, which will be continued in the same progressive and aggressive policy that has characterized the firm in the past. Manufacturers of brick and tile, desiring information in regard to improved machinery, should include Plymouth in their itinerary whenever on their tours of inspection. They will be welcomed cordially and given every opportunity to obtain inside facts in regard to every detail of brick and tile manufacture.

THE GREATEST FUEL WASTE.

Floyd W. Parsons, editor of the Coal Age, in writing on the subject of coal in the Saturday Evening Post, makes the statement that the most barbarian practice in our industrial life is our custom of burning raw coal. Then he illustrates by figures how more than two hundred million dollars a year goes up in smoke through the burning of raw coal, which could be saved by coking and obtaining various by-products. Since the clayworking industry is one of the important coal consuming industries this should emphasize the importance of producer gas kilns and other things making for economy in coal consumption.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Second Hand Dryer Cars Wanted.

Editor The Clay-Worker:

We are in the market for 40 second hand dryer cars similar to the American Clay No. 82 dryer cars. Can you assist us in getting same? Thanking you in advance for any favor we beg to remain,

Yours very truly,
YANKEE HILL BRICK MFG. CO.

Lincoln, Neb.

Compliments Arkansas Brick Manufacturer.

Editor The Clay-Worker:

In the May issue of the Clay-Worker just received, there is a letter from Mr. W. W. Dickinson, Jr., superintendent of the Arkansas Brick & Tile Company.

Mr. Dickinson has started something original in the matter of his bonus arrangement with his employes. His letter addressed to his employes is straight to the point, and puts the matter of advance in wages clearly up to them, and will doubtless bring the results he is looking for.

Mr. Dickinson certainly shows the right spirit in seeking to give fellow clayworkers the benefit of his ideas and experience, and the more men there are like him in the business the better for all.

Yours very truly,
Kankakee, Ill. HAROLD COPPING.

A Belated Convention Echo from Sweden.

My Dear Mr. Randall:

I duly received today your kind letter of March 9 and am very glad to hear that the convention of clayworkers in Indianapolis was a very nice one. I am sure that all those who could come to this convention had a very interesting and agreeable time, as it was held in your own town, and as I know how splendidly you can arrange and manage these conventions. I had a little hope to come to this year's convention, but formalities of visa for passport are rather slow. Perhaps I will come to the States in the summer and will not then omit to see you.

I am very glad to tell you that I just a few days ago received a long, interesting letter from our mutual friend, Prof. Edward Orton, P. T., in Washington. I hope indeed that his technical knowledge is best utilized just at the place where he now is, and I beg you to accept my best regards for yourself and your family from Mrs. Cronquist and

Yours cordially,
G. WSON CRONQUIST.

Helsinburg, Sweden, May 22, 1918.

New Jersey Clayworkers to Meet at Trenton June 25.

Dear Mr. Randall:

The summer meeting of the New Jersey Clay Workers Association will be held in Trenton, on Tuesday, June 25. We are planning an interesting and an instructive program to be presented at the morning and afternoon sessions of the Association and trust that you will find it convenient to spend the day with us.

I note that, unfortunately, the summer meeting of the American Ceramic Society will be held during the same week, starting on Tuesday. I also note that the meeting of the A. S. T. M. will be held in Atlantic City during this week. We selected the above date for our meeting in order that those of the Ceramic crowd who regularly attend the A. S. T. M. meeting can also conveniently attend our meeting during the first of the week. This has also been the practice of the Association in the past.

If not too late, I would appreciate a note in reference to our meeting in the next issue of the Clay-Worker.

With best regards.

Yours very truly,
G. B. BROWN, Secretary.

Thoughts of an N. B. M. A. Absentee.

Friend Randall—I duly received your official announcement and program of the convention, which I note is to be held in your home town, and wish I could have been with you. I have had it in mind to write several times, but I am very busy, what with public work and matters connected with the war, I have little time to myself. However, here is my check for $5.00 to pay my membership in the N. B. M. A. for the ensuing year, and regret being late with it; but you can realize at a time like this how easy it is to let matters of this kind wait.

I often wonder what would have happened if the nations at war, instead of using the billions of dollars for destruction, this same amount could have been used for betterment or construction. It seems to me at times that we are still at the beginning, when, as they used to do in the past, a fellow took a notion he wanted the other fellow's property, he concocted some scheme or other whereby he could fight him for it, and took it. What a recommendation the Germans have for their boasted "kultur" slaying the best in the land—for what? I wonder when nearly every one of those who are responsible for this terrible slaughter will be occupying about 6x3 feet of this earth, and it will be all they will get, too.

If this is what they call education, "kultur," for God's sake give me the grossest ignorance. When I can't settle any matter that I have with my biggest enemy in any other way than by shooting him down, then I say life is not worth living. We have had nearly four years of it now, old boy, and, believe me, if anyone could have made me believe that it was possible for anyone to have in their minds such deeds as have been perpetrated this last four years, I should either have thought him crazy, or that I was losing my mind, which is the same thing, only in different words.

I can't find words that would condemn enough such thoughts and actions, and any man who will breed, educate and raise men with the idea of sending them to be shot at is past my comprehension. Talk about their boasted education and "kultur! I say, "The Lord deliver me from it and all such like."

The Germans say that England is their greatest enemy. This, we Britishers regard as a compliment, for England stands for fair play and decency the world over. You in the States must know that England did not court this war. In fact, England was wholly unprepared, as much so almost as the United States. That's why the German army carried through Belgium as it did, but it is different now. At the beginning we had a very small army. Today we are meeting Germany with ample forces, and with the help of the United States, for which we are all duly grateful, we will fight the war to a victorious finish.

Germany started the war, but the Allied forces will stop it. I presume you know as we do that if Germany had won in the beginning, as they hoped to do, it would have been a matter of only a little while until you would have been compelled to fight for your rights and liberty.

No one knows what is being sacrificed at this present moment, and for no purpose than the lust for power. I regard it as a piece of daylight robbery. They coveted more territory and greater power, and proceeded to take it by right of might. What a record for any nation claiming to be civilized!

Well, I must stop; I am looking forward to the full report of the convention. Our mails are delayed, but I know it will come soon, and while it isn't the same as being present and enjoying the personal touch with the members, it is the next best thing to it.

Wishing you every possible success, I am,

Yours truly,

HERVEY HAIGH.

Slaithwaite, England, April 6, 1918.

Seen in New Jersey.

Editor The Clay-Worker:

Brick brokers are congratulating themselves that shipping conditions are somewhat better than they have been. It is still hard to get cars, but once a car is obtained and loaded it is sent through quicker than it ever was before. Cars are received with brick on the job in eight and nine days where formerly they required eleven and thirteen to get through. The administration of the railroads doesn't allow them to linger on side tracks or at terminals now; but they do not hurry themselves to get cars for shipping brick. To that extent the situation has not improved. Still, nearly all interests feel sure that as soon as the tremendous pressure due to war activities is removed the situation will be much better than it was the last year or two before the war broke out.

The advance in freight rates causes some discussion, but brickmen realize that the railroads need more than they have been getting and they are in no mood to criticise the management. Perhaps it might be said that if cars are furnished in reasonable number and shipments are expedited as they are now brickmen will be disposed to say much about the increase in rates. Business is too small now to warrant complaining anyway, and when once the repressive regulations are removed it will be impossible to satisfy the demand. Therefore, no one looks forward to much trouble because of increased rates. High prices are so common that practically everybody is used to them now and would feel alarmed if prices were not advanced. They would think the business was considered a dead one.

Along the Hackensack river brick making is at the lowest ebb in years. Few kilns are burning and only one or two yards are laying up brick for kilns to be burned later. The outlook is not promising and few feel as though they cared to undertake any important development with present repressive regulations controlling. Not a barge has been shipped yet and no manufacturer is shipping by rail. Motor trucks are used to deliver brick sold within a short distance. And unquestionably more manufacturers will turn to motor trucks in the future. They are stable, more certain than either barge or rail and can be handled with more dispatch. These are all features which appeal to manufacturers and to buyers who want brick on the job about as soon as it is ordered. The Merhoff interests are doing something and the Gardners are at work, but that is about all. The weather has been bad for drying, the rain coming down almost every day the last half of May and some of the showers were severe. The effect was disastrous in some instances and the brick will have to be molded over. With only small quantities drying, as compared with previous years, the situation was not as bad as it would have been if all had been rushing. Labor cannot be obtained and yards now open are badly crippled and will be worse.

In the Pearson district the situation is no better. No building is in progress. Architects have plans for some new mills, but none of them will be erected until 1919. Several good ones are under consideration. Brick brokers say they have a few inquiries, but they are too small to amount to much and they are nothing like what is commonly received at this season. Very little inquiry concerning brick is heard. Indeed, all structural work, excepting that which in some way relates to war work is relegated to the waiting list for an indeterminate period. The American Shell Co. is about to increase its work to three times the present size and employ something like 6,000 additional hands, but probably these buildings will be in the nature of temporary structures. The Du Ponts are increasing the size of their factories at Haskell, a few miles from Paterson, but they are not using brick there, excepting in some of the new houses. Not much hope for Paterson until the war is over, or its end is in sight.

Cochran, Drungon & Co., Trenton, manufacturers of sanitary ware, had two kilns in operation recently and reported business fair. Most Trenton manufacturers have received a liberal share of orders given out by the government for sanitary ware and they have had little opportunity to make for civilian use.

The Crossley Manufacturing Company, makers of clay refining machinery, Trenton, have done a fair business all the season and have some orders ahead now. The output is not as large as it might have been under other conditions, yet the fact that certain classes of clay cannot be obtained from Europe any longer has caused a wider demand for refining machinery to care for native clays. This demand promises to increase until it is much larger than it is now.

A STUDY IN HEAT TRANSMISSION.

The engineering experiment station at the University of Illinois, Urbana, Ill., has furnished us in Bulletin No. 102 a study of the heat transmission of building materials. This is the result of experiments which have been conducted at the university under the direction of A. C. Willard, professor of heating and ventilation, and L. C. Lichty, Research Fellow. The tests were conducted according to so-called "hot air" box method and the heating was done electrically, so that the input of heat could be controlled and accurately measured. One of the important practical conclusions as a result of this technical effort is that air space is an insulator at moderate temperature but when a high temperature is attained the solid wall gives more satisfactory results. We are informed that copies of Bulletin No. 102 may be had gratis by addressing Engineering Experiment Station, Urbana, Ill.

TEAM WORK.

It ain't the guns nor armament
  Nor funds that they can pay,
But the close co-operation
  That makes them win the day.

It ain't the individuals
  Nor the army as a whole,
But the everlastin' team work
  Of every bloomin' soul.

—Kipling.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXIX. JUNE, 1918. No. 6.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Stick to the War Savings Stamps.

* * *

The leading industrial question of the day is how to do the work with fewer men?

* * *

One of the orders of the day calls for economy in lubricating oil and saving and reclaiming of cotton waste.

* * *

There is no such thing as getting too much patriotism, but sometimes we feel like we are overdoing the parading part of it.

* * *

Able-bodied men are asked to do a little wholesome work at harvesting as a sort of vacation change. It will be hot but it will be healthy and helpful.

* * *

The Fuel Administration at Washington has put into operation the idea of supervising coal economy at industrial plants. Those plants best equipped for fuel economy will get preferential treatment in making curtailments. This should help encourage progress both in boiler furnaces and in kiln burning.

* * *

While we are at war let us not neglect to plan and prepare for the peace days to come.

* * *

One splendid place to put forth practical patriotism on the Fourth of July is on the farm helping to harvest wheat.

* * *

The war garden is now coming into its own—except where the weeds and bugs have been allowed to take possession.

* * *

It is time to either put ball bearings on the wheelbarrows or put power trucks in their place to lighten the burden of work.

* * *

The man who has neglected the upkeep of his brick plant because he thought times would be dull has been following the wrong idea.

* * *

The present indications are that the girls will have to help man the brick yards, and that the brick yards will have to be operated more than it was thought they would.

* * *

We are now getting some splendid dividends on the good roads work done heretofore. We should find in this encouragement to continue doing more building of roads.

* * *

There is a great time coming in the building industry when the war ends, and the wise ones are makng plans and preparations for it. Meantime there is a housing problem before the government at crowded centers which is calling for more building material than many seem to be aware of.

* * *

Switzerland, long famed in watch and clock making, has decreed that beginning May 1, 1919, their time pieces shall carry hour numbers from 1 to 24, beginning at midnight, thus doing away with the A. M. and P. M. It is a sensible idea that will likely be adopted the world over in the course of a few years.

* * *

Somehow it seems to require a lot of effort to move Congress toward the right idea in regard to second class postal rates. There was really never any excuse for the zone idea as applied to publications, and Congress should have been willing to promptly correct this error as soon as attention was called to it.

THE BUILDING QUESTION.

At this writing the building question is practically reversed from what it was the first of the year. The first of the year the question was to determine the necessary building operations and ways and means for curtailing that which was not necessary. Today it is realized that unnecessary building was automatically curtailed, and that the curtailment included building operations which really are necessary. So the question today is how to encourage and develop enough building to supply the actual needs of the country.

Many of the cities of the country are so short of housing facilities that one of the serious problems confronting the government as well as the people is that of how to encourage and develop home building and housing.

One authority estimates that normally the building operations of the country total a billion and a half a year, and that this year actual building will likely fall below a third of a billion. The let-up in building has resulted in both a shortage of buildings and a shortage of building material, so the months to come are likely to see a great scramble for brick as well as for other building material.

The question of the day in connection with building operations is not one of curtailment but of encouragement, of devisng ways and means to get more building material and carry on more building. The price of lumber has gone skyward and so much of it is needed for the government that in some instances retail dealers in building material are having to pay $5 and $7 a thousand feet above government prices. Steel for structural purposes is not available in any great quantity, cement prices have increased all around, all of which makes it look like a great day for brick if we can get the brick at the right time at the right place. At some congested manufacturing points there is a surplus of brick, but taking the country over there is a shortage, and with the curtailment in manufacturing the great problem of the brick industry before the year is over will be how to get enough brick to supply the needs, unless all signs read wrong.

FREIGHT RATES.

While some people probably hoped that government control of the railroads would result in enough improvement in efficiency and elimination of duplicated effort to, in a great measure, offset the increase in operating expenses, it has been very plain for some time that increased freight rates were inevitable. Still there will be considerable protest and some confusion. Also there will be a submitting to the inevitable by many people for the simple reason that with the country at war they would rather shoulder hardships than risk hampering the government by arguments and contentions at the present time. A stiff increase in freight rates, however, will not tend to make converts for government ownership. Meantime between the new freight rates and the war tax stamps on freight bills there is a job before the clay-working industry in figuring out a new schedule of delivered prices.

DEPLETION CHARGES.

Indiana has a gravel association which at a recent meeting held at Indianapolis took some interesting action in regard to depletion charges that contains a hint to the clayworking industry in this same matter.

There was a thorough discussion of depreciation and depletion charges in gravel plant operations, which crystalized in a general conclusion that a depletion charge of five cents per ton was advisable and justifiable. A depreciation charge of 10 per cent. per annum was considered about right.

The clayworking industry has never given enough serious attention to the matter of either depletion charges or depreciation charges and now the time is here when these must not only be taken into proper consideration, but more value must be attached to the clay consumed than has been allowed for it in the past if the clayworking industry would prosper as it should. This seems to be especially fitting work for the local organizations and state associations.

LET'S HUSTLE THE HAULING.

Those in charge of the publicity end of the Administration affairs at Washington furnish us the news that the railroads and the transportation situation has been improved considerably. Moreover, we can easily see that the congestion has been materially relieved. It couldn't very well be otherwise. There has never been a time in the history of our railroads when they could not improve the transportation situation and hustle up the hauling during the spring and early summer months. There has not been enough improvement so far and we need to hustle it up more. Comparative figures of how much the speed of freight cars has been increased show progress, yet progress from an average travel of 26 miles a day to 30 miles a day is not enough progress in these times of hustle all around.

So long as the clayworking industry must suffer curtailment through an order of the Fuel Administration because of the shortage of coal, and so long as the main factor in this shortage of coal is railway transportation, there is plainly not enough improvement in the transportation situation.

The railroad heads heretofore have made one excuse and another, the common one being that of lack of capital. Under the present system there is no room for excuses of this kind, and those in charge of the railroads should hustle the hauling along. If they fail to do this during the summer, to clear up the transportation situation and add materially to the railway equipment, there will be a howl going up from the people that will be both heard and listened to.

ENGLISH CLAY IMPORTS.

A regular press bulletin of the U. S. Geological Survey on the clay imports of 1917 shows that we imported 253,831 tons of kaolin or china clay during last year at a value of $1,325,759. We imported some other clays running the total up to 317,465 tons, which is about 7 per cent. of the domestic production of clay that is marketed as clay instead of being worked directly into clay products.

The imported clay is used mainly in making paper, pottery, textiles, oilcloth, ultramarine, high grade refractories, lead pencils, enamel ware and other articles. The average price per ton of the imported clay was $5.61, compared with an average of $2.16 for domestic clay.

The imports for last year show a decrease of nearly 24,000 tons as compared to the previous year, which indicates development of our native clays to take the place of the imported. Moreover, investigations carried on by the experts of the Geological Survey indicate that the United States is or can be made practically independent or self-sustaining so far as our clay supply is concerned.

Meantime we are being told that our manufacturers are so dependent upon the imoprts of this English clay that ships are delayed in their return for loading with this clay, even though there is urgent need of the ships for other purposes. Commenting upon this point a special bulletin included with the regular press bulletin asks the question, why do our manufacturers pay the high freight rates now necessary in order to obtain an article like clay from England? Then it proceeds with this explanation:

There is, as we all know, an abundance of clay in this country. A great deal of high-grade clay is produced here, and of a character suitable for pottery, porcelains and other articles which require clays of special excellence in their manufacture. But not much over half of clay of this grade that our industries require is domestic. When war broke out in 1914 only a third of it was domestic. We have not been able to develop and equip our deposits fast enough to make these English clay imports unnecessary. In fact, it is doubtful whether we will produce as much high-grade clay in 1918 as in 1917. Our manufacturers want the clay, but they cannot get anywhere near as much as they want. The reduced output is due to railroad and operating conditions and is not related to the character or size of the deposits which are capable of large production.

Domestic producers do not mine their clay quite as cleanly as their English competitors. Nor is the domestic clay as uniform in character. It will not bring the high prices paid for English clay. But more could be sold if it could be produced and carried to its market. Still more could be marketed if cleaner, more uniform clay were produced, for in that event the consumers would use a greater percentage of domestic and correspondingly less English clay in their mixtures.

However, our complete dependence upon English clay continues. We must rely on English clay as a chief ingredient of the dishes we eat from, the paper in our books and magazines, the porcelain in our electric light sockets and a half a dozen other articles of less general use.

Fortunately it is a fact that far less English clay is necessary to proper manufacture of paper than is now used. Besides domestic clay there are many other substances of domestic origin that could be used in the body, not the finish of this paper. Also over half of the English clay we use is consumed in making paper. So that if a shortage of English clay should develop it would not be highly serious until the shortage became very great, until there was only a half of the normal supply or less available.

Table of Contents

How Clay Products Can Help Win the War............737
Clay Mining Progress......739
Hollow Tile as a Factor in Fire Prevention 740
Burning Clay Wares.......744
Colombia as a Trade Field..746
Help the War Work and the War Work Will Help You.747
Postal Taxes 747
Of Interest to Drain Tile Manufacturers 748
Carved Tapateta 750
Labor Fights in Self-Defense 753
Manufacturers of Common Brick in Chicago to Consolidate 753
America First 753
Prepare for the Future.....754
A Safety Switch...........755
How Clayworkers Can Help Win the War............756
Midsummer Meeting of the American Ceramic Society.758
Ceramic Conference Held in Pittsburgh 759
National Paving Brick Manufacturers' Association....760
Latin-American Prospects in Clayworking Machinery...762
Co-operative Preparedness..761
Obituary—Death of Harry S. Fate 763
Minter System of Burning Brick and Tile...........761
Chicago Ceramists Hold Meeting 763
Reorganization of the J. D. Fate Co. 763

CORRESPONDENCE:

News from Dixie Land.....743
Pacific Coast News.........749
With Cincinnati Brick Men..757
Brick and Building News of Evansville 752
Second Hand Dryer Cars Wanted 764
Compliments Arkansas Brick Manufacturer 764
A Belated Convention Echo from Sweden 764
New Jersey Clayworkers to Meet at Trenton.........764
Thoughts of an N. B. M. A. Absentee 764
Seen in New Jersey........765
New York and Vicinity.....788

EDITORIAL:

Current Comment 766
The Building Question......766
Freight Rates 767
Depletion Charges 767
Let's Hustle the Hauling...767
English Clay Imports.......767
Current Trade Literature...768
Editorial Notes and Clippings 787

MISCELLANY:

Producer Gas for Periodical Kilns 760
Standards for Catalogs.....761
A Study in Heat Transmission 765
Industrial Haulage 768
Brown Pyrometers 768
Geology of Jackson County, Mich. 797

INDEX TO ADVERTISEMENTS ON PAGE 798.

CURRENT TRADE LITERATURE.

According to the Book of Smiles, just out, the Standard Dryer, which is illustrated on page 736 of this issue is a war time economy, for one man operates it. For further particulars, the reader will please write the Standard Dry Kiln Company of Indianapolis, for a copy of the Book of Smiles, which contains the usual quota of smiles in rhyme and prose. Among the latter is the following: "The subconscious mind is the thing that keeps an automobile off the sidewalk while the driver is busy watching a chicken cross the street."

INDUSTRIAL HAULAGE.

Every labor saving device is of unusual interest these war times, hence our readers will be interested in Bulletin No. 25, issued by the Lakewood Engineering Co., Cleveland, Ohio, describing and illustrating their various trackless systems of haulage, among which are some new and novel devices, which enable manufacturers to handle all kinds of industrial materials expeditiously and with a minimum of labor. The L. E. Company are pioneer car manufacturers. Gradually the company has expanded until today it manufactures practically complete lines of both industrial and construction equipment, all of which is beautifully illustrated in this recent publication, a copy of which can be had for the asking. See Lakewood ad on back cover.

BROWN PYROMETERS.

An eighty page catalogue has recently been issued by the Brown Instrument Company of Philadelphia, Pa., in which is illustrated some of the most improved instruments used in present day pyrometry, high resistance pyrometers having an internal resistance of anywhere from 600 to 1000 ohms.

The new Precision Heatmeter is fully described. This is a direct reading temperature indicator in which all errors due to temperature co-efficient or line resistance are eliminated. It has been designed for the measurement of all temperatures within the range of either platinum or base metal thermo-couples.

The new features of the Brown Automatic Temperature Control and a complete description of the Brown Automatic Signaling Pyrometer are given.

Further on in this catalogue, is shown for the first time the Brown Transformation Point Pyrometer, a patented instrument, which determines the transformation points of steel. This is illustrated by a chart from the Bethlehem Steel Co., showing the AC 1, AR 1, and AR 2 points of 30% nickel steel. This instrument should be of interest to everyone engaged in the heat treatment of steels.

The various types of platinum and base metal thermocouples and protecting tubes are described at length. Suggestions for the installation of couples, and methods of standardizing Pyrometers are thoroughly discussed.

The Brown Resistance Thermometer, Radium Pyrometer, Expansion Pyrometer, and Quick Acting Pyrometers are all shown. Instruments for lower temperatures such as Recording Long Distance Thermometers, Mercurial Pyrometers, are also illustrated.

A copy will be cheerfully sent to any one who may be interested.

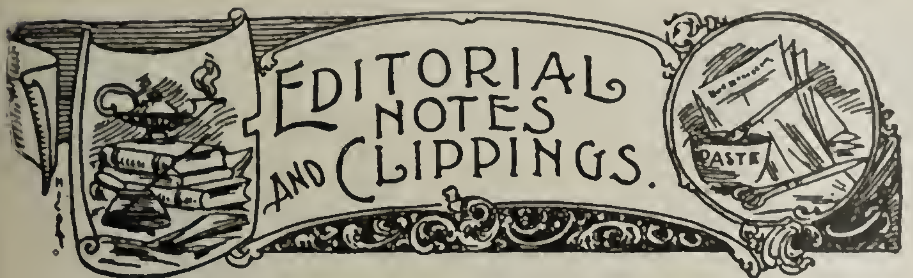
WESTINGHOUSE ELECTRIC ACQUIRES NEW PLANT.

The Westinghouse Electric & Mfg. Company has leased for a period of years, the Baxter Stove Company, Mansfield, Ohio, with the intention of consolidating at this plant the manufacture of its heating appliances now being carried on at some of the other Westinghouse plants.

YOU HAVE KNOWN FOR YEARS THAT
RICKETSON'S MORTAR COLORS
are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.

Why Not Insist on Having Them?

They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.
Red, Brown, Buff, Purple and Black.
RICKETSON MINERAL PAINT WORKS
MILWAUKEE, WIS.



EDITORIAL NOTES AND CLIPPINGS.

F. R. Adams, of Danville, Ill., contemplates establishing a brickmaking plant at Monroe, La.

The Alonzo Curtis Brick Company, of Grant Park, Ill., has been dissolved by mutual consent of the stockholders.

The Hoosier Clay Products Co., Hillsdale, Ind., has filed a certificate reducing its capital stock from $150,000 to $60,000.

W. R. McPherson, of Bloomdale, Ohio, and H. I. Kahle, of Ottawa, Ohio, have purchased the tile plant of Fries & Campbell, at Bloomdale, Ohio.

The St. Louis Tile Co., of St. Louis., Gratiot county, Mich., has been incorporated with $60,000 capital stock, half of which has been paid in.

The American Clay Machinery Company, one of the most progressive and aggressive firms in the clayworking field, recently voluntarily raised the wages of all their employes at their Bucyrus (Ohio) plant, 5 per cent.

Richard Stockton has been appointed permanent receiver of the Universal Brick Co., of Newark, N. J. The plant is located at Mountain View.

The Central Michigan Clay Products Co. has been organized at Alma, Mich., with $60,000, and has taken over the tile plant at that place. New kilns will be built and a number of improvements made in the plant.

The immense brick plant of Welsh, Gloninger and Maxwell, at Johnstown, Pa., was almost completely destroyed by fire recently. The loss is estimated at close to $30,000. The main office of the company is in Pittsburgh.

The Wagner Fire Brick Co., of Scranton, Pa., has been reorganized, and will issue bonds to the amount of $100,000 to be used as additional capital. E. V. Wagner is president and Jos. S. Kroft, secretary-treasurer of the newly organized concern.

The plant of the International Brick Company at El Paso, Texas, is running in good shape, according to our correspondent, and turning out an exceptional product. This plant is one of the most complete and economically operated brick factories in the country.

The roof of the Nashville Brick & Tile Company's plant at Nashville, Tenn., was destroyed by fire early in the morning of June 12th. The flames communicated to the dryer, which was considerably damaged before the fire was under control. The loss is estimated at about $1,000.

The Columbus Fire Brick Company, of Columbus, Ohio, has just closed negotiations with the Atlantic Terra Cotta Company and the American Enameled Brick & Tile Company, both of New York City, to act as central Ohio representative. E. C. Howard is general manager of the Columbus company.

The Kennedy Refractories Co., with offices in the Union Arcade Building, Pittsburgh, Pa., and plants at Barnridge, Pa., and Bettsville, Ohio, making a product known as Kendyma, which is used for basic linings for open hearth crucible steel furnaces, will build another plant at Landisville, Pa., and work on same has been started.

Application to change the name of the Craycroft-Herrold Brick Co., Fresno, Cal., to Craycroft Brick Co. has been filed in the office of the county clerk. It states that Herrold has not been interested in the company for the past five years. Directors signing the petition are Frank J. Craycroft, M. F. Craycroft and F. M. Tobin. Hearing on the petition is set for July 8.

There has been a considerable increase in the exportation of clays from New Jersey to manufacturers in other states during the past year, according to announcement from the state department of conservation and development of New Jersey, which reports that many communications are being received by the department in regard to the miners and shippers of clays of various kinds in that state as well as information on smooth plastic clay of a very high heat resisting quality.

The Cordery Brick Co., of Monroe, Mich., has been incorporated with $5,000 capital stock.

Jos. A. Caldwell, Wm. E. Eberhardt, Jr., and Fred Dulaney have organized the Caldwell Brick Co., of Blountsville, Tenn.

The Champlain Brick Co., of Troy, N. Y., which closed its plant some time in January on account of the fuel situation, is operating again.

The Molalla Fire Clay Co., Molalla, Ore., has been organized and work has been started on a plant at that place, the town having donated a tract of 27 acres of ground to the company as a bonus.

George H. Ivory, for 25 years superintendent of the brick department of the Carnegie Steel Co., Duquesne, Pa., died at his home recently after a brief illness. Mr. Ivory was 45 years old and leaves a wife and five children.

The brick plant at Cridersville, Ohio, which was destroyed by fire last month, will not be rebuilt. The owner of the plant, John Beerline, announces that he will retire from business; his only son is in the army, and there is no one else to look after the business.

The General Fireproofing Co., of Pittsburgh, Pa., has declared regular quarterly dividends of 1¾ per cent on each of the common and preferred stock. Both are payable July 1st to stock of record June 20th. The company is operating from between 82 to 85 per cent. of its capacity on government work.

The employes of the Western Brick Co., of Danville, Ill., issue a weekly publication known as "The Bulletin." The first issue was published a couple of months ago and is one of the most popular publications in Danville. In the last issue of The Bulletin they give the names of thirty-seven employes of the company who are with the colors, together with the present addresses of all but three.

Notice has been issued by Edward J. Pfeffer and Charles S. Speese, that the partnership formerly existing under the firm name of Speese & Pfeffer, of Gettysburg, Pa., has been dissolved by mutual consent. All debts due to the firm are to be paid to, and those due from the firm discharged by Charles S. Speese. The business will be carried on by Mr. Pfeffer, under the name of the Gettysburg Drain Tile Works.

The new plant of the Chicago Fire Brick Co., of Marseilles, Ill., is fast nearing completion. The machinery building has been completed, as has also a clay shed which will hold 200 tons of clay. The mine has been thoroughly overhauled and new equipment installed. While it is the intention to have 20 kilns, they will not all be built this year, but construction on same will be deferred pending the winning of the war.

A 20 per cent. increase in wages has been granted the members of the Chicago Brickmakers' Union by the brick manufacturers of Chicago, headed by William Schlake, president of the Illinois Brick Company. The increase took effect June 1 and will affect 2,500 brickmakers, according to Arthur Therrien, business agent of the union. The minimum scale will be 50 cents an hour. The minimum scale at present is 39 cents per hour.

Two of the employes of the Western Brick Co., at Danville, Ill., Fred Felgenhauer and John Dubre, were both injured, the former quite seriously when they were caught between two coal cars on the incline over which the coal is hoisted. They were engaged in replacing a car that had been derailed back on the track when the cable holding some cars near the top of the incline broke, and they did not see the approaching cars in time to escape.

Through the ability and energy of Miss Mae Weasmer, a former Iowa young woman, there is now being developed in Bollinger county, Mo., near the town of Lutesville, what the government geological reports say is the largest china clay mine in the United States. Miss Weasmer made the investment, prospected and developed the property, then promoted a company to build a large grinding and manufacturing plant in Lutesville. The plant is now completed and in full operation, and the output of 50 tons a day is contracted for the coming year. China clay enjoys a large and regular market and on the different grades the prices run from $10 to $17 a ton. It is being used by the government, by manufacturers of newspaper and wall paper, by the rubber trade in the manufacture of tires, for pottery and in the paint and other trades.

Amendments were filed by the Corsicana Brick Co., Corsicana, Texas, increasing the capital stock from $50,000 to $80,000.

The Southern Clay Manufacturing Co., of Chattanooga, Tenn., has brought suit against the town of Troy, Ala., for an alleged breach of contract. The company has done all of the street paving for the business district of Troy.

V. L. Wilkins, formerly connected with the Detroit Tractor Company, has assumed the resident managership of the new plant of the American Clay Machinery Company, 117th street and Calumet Lake, Chicago, Ill., now being erected for government work exclusively.

The Calumet plant of the Chicago Brick Co., 138th and Stony Island ave., Chicago, Ill., has been purchased by Richard Fitzgerald, president of the Chicago Junction Railway, from the estate of P. J. Sexton, stated price being $156,022. The land comprises 85 acres, on both sides of 138th, on the south side of the Calumet river, between the Michigan Central Railroad and Ellis avenue extended. The new owner will continue to operate the brickyard.

Cecil D. Gregg, president of the Evens & Howard Fire Brick Co., of St. Louis, Mo., has been appointed head of the Department of Progress of the Ordnance Bureau for Washington, where he is now located. He will retain the presidency of the brick company. His new duties, it is understood, will be similar to those of an efficiency expert, in that he will see to speeding up production of guns, and to maintaining the accelerated rate of manufacture.

Petitions in bankruptcy were filed early in the month by the Rose Brick Company, of Roseton, New York, with general office at 103 Park Ave., New York City, and also the John B. Rose Company, dealers in sand and gravel. John B. Rose is now serving his country with the title of Colonel, as chief of the Bureau of Anti-Aircraft Guns in the Ordnance Department, and has been devoting practically all his attention to military affairs, and this in addition to the fact that the brick business in the east has been poor for several years, is given as the reason for the condition of Mr. Rose's business affairs. C. Clayton Bourne, James G. Graham and A. S. Gilbert have been named by the court as receivers.

The plant of the Oskaloosa Vitrified Brick Co., Oskaloosa, Iowa, was badly damaged by fire June 1, the gas producer and coal bunker being completely destroyed. The fire started in the lower part of the building in the firing room. It soon spread upward, catching the coal bin and the 75-foot elevator which were burned to the ground. The elevator crashed to the earth, completely covering the building, making it impossible to try to save anything but the adjoining building. Manager Chilcote was unable to estimate the loss suffered, but it will be rather heavy. Besides the buildings and the elevator burned, over 200 tons of coal stored in the bunker house was destroyed, together with a car of coal on the track near the building. Only part of the loss will be covered by insurance.

Sixty men and boys of the Eureka Fire Brick Company, at Mt. Braddock, Pa., have pledged themselves to do their utmost to win the war by turning out 100 per cent. production at the plant. This is a voluntary act in which everyone, from the president of the company down, has joined. A committee has been appointed of three men and three boys to report any violation of the pledge, such violation causing the removing of the honor button now worn by all the employes, which reads: "I am helping win the war." The pledge reads as follows: "For ourselves and our company, we, the undersigned officers and employes of the Eureka Fire Brick Works, pledge the prompt production and delivery of the largest quantity of material that is or shall be required by the United States Government for the necessities of itself and its allies, and agree that all non-essentials shall be subordinated to this pledge, and all this in accordance with the request of the War Industries Board."

The Gasconade Clay Products Co., of Gasconade, Mo., has been incorporated with $11,000 capital stock by Frank Y. Gladney, E. M. McLean and Leo J. Nouss.

The Decatur Brick Co., of Decatur, Ill., has purchased a 5-ton truck for hauling brick and coal. Mr. Mattes, the general manager of the company, says he expects in time to do away with teams altogether.

The Old Hickory Clay & Talc Co., of Paducah, Ky., has been organized with $25,000 capital stock. C. E. Jennings is president and manager; N. R. Farris, vice-president; S. F. Howard, secretary, and R. N. Scott, treasurer. The company has 40 acres of clay land which it will develop and anticipates shipping two or three cars of clay per day. Either gasoline or steam engines will be installed, together with belt conveyor and drag line.

Allen H. Conway, formerly an engineer at the American Brick & Tile plant, Mason City, Iowa, has finished his course of instruction at the Ohio State University and received a commission as a lieutenant. He has been in training in the adjutant's school for several months and has now been assigned to duty at Fort Wayne, Ind. His work will consist of construction of military roads, bridges or any such necessities of military life.

S. J. Heafield, general manager of the Ancho Brick Company, with plant at Ancho, New Mexico, and general offices in El Paso, Texas, writes that the company is just finishing completing a modern up-to-date plant that will produce approximately 300 tons of manufactured ware per day. The brick from the old Ancho plant has been in use in the southwest for the past ten or twelve years and has always given satisfaction. They will manufacture not only fire clay ware but silica brick, brick, and also have under consideration just now the manufacture of magnesite brick.

NEW YORK AND VICINITY.

The long brick tows, which have been a feature of Hudson river and harbor traffic for many years, are conspicuous by their absence this year. Now and then one comes down, but not many. Indeed, brick is not wanted in anything like the quantity which commonly comes down the river at this season. Not much building development is in progress and that is only on buildings which were begun sometime ago and must be finished, or on those which are in some way related to government work. No new development aside from this is reported, or, at least, nothing like what commonly is seen during the spring months. Until the war ceases only necessary building is probable and brick manufacturers will suffer with the rest. Quite as much brick is used as ever, relatively, but the total is a very small quantity when compared with the brick wanted in previous years.

Work along the Hudson is much restricted and nothing is now in sight which indicates a revival. Therefore, it looks as though the Hudson river yards will be obliged to go about their operations on a very restricted scale this summer. They couldn't get help to keep up their output anyway and they would have no market for their offerings if they succeeded in developing an output approaching normal. Therefore, the business seems destined to wait the end of the war, Then such a rebound will be seen that all manufacturers will suffer about as much as they do now because they will be unable to get out the brick wanted fast enough to satisfy the constantly growing demand. It is a good time to spread the brick propaganda because in the future buyers of homes or anything else made of brick or burned clay will want full value for their money and they will soon discover that they can get it only in brick. Tell them about it so often they will know it when the ban is removed.

BURTON.

25% SAVING

and usually more

In Coal and in Labor

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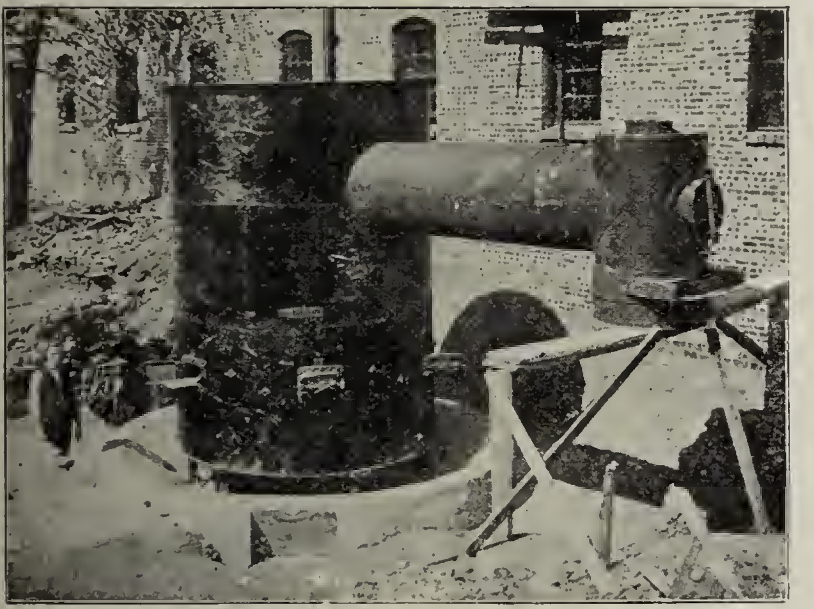

Construction 1-7 ft.
Producer for Pottery Kiln

Whether you burn
Brick, Tile or Pottery

INTERNATIONAL PRODUCERS

and forced Draft

BURNERS

can be adapted to your Kilns

Remember your coal troubles last winter

Write us today

International Clay Machinery Co.

DAYTON, OHIO

A CONFERENCE HELD IN PITTSBURGH.

(Continued from page 759.)

the materials mentioned below is given in Bulletin 624, of the U. S. Geological Survey, "Useful Minerals of the United States," and also in the various bulletins of "Mineral Resources of the United States." Only a few of the most important uses of the materials will be mentioned below. The materials will be discussed in the order in which they are given on page 7 of the report of the Committee on Ceramic Chemistry, with certain new materials added. In each group only the materials for which there exists a shortage will be discussed and the other materials mentioned in the above report need not be considered in connected with the present survey plans.

The United States Geological Survey's bulletins on "Mineral Resources" contain many helpful suggestions concerning geological formations, in which many of the materials listed below may be most profitably looked for.

(2) Forms of Silica.

(a) **Ganister.** Abundant supplies of this material are known to exist in Wisconsin, Pensylvania, Alabama and California. The discovery of new deposits will be principally of value in relieving the transportation situation. A Bureau of Standards bulletin dealing with the subject is now in press. Arrangements for testing samples of ganister may be made with the Bureau of Standards.

(b) **Molding Sands.** This material has been added to Group 2. In view of the increasing demands for this material it is desirable that new deposits of convenient location be discovered. No entirely satisfactory laboratory methods of testing have been discovered, and it is suggested that arrangements for handling tests of this material be made after consultation with Professor J. A. Bownocker, of the Ohio State Geological Survey, who has made a special study of this subject.

Attention is also called to the recent bibliography on "Sand, Its Occurrence, Properties and Uses," issued by the Carnegie Library of Pittsburgh, which contains a list of literature references dealing with molding sand, glass sand, etc.

(c) **Flint Pebbles.** This material has been added to Group 2. These pebbles are needed for use in ball mills. Previous to the war most of this material was imported from France and Norway, and since this supply is now largely cut off domestic source of these pebbles should be located. The pebbles should range in size from two inches up. No further tests are required.

(d) **Potter's "Flint."** This material should be italicized in Group 2. A material having a so-called "amorphous" structure is desired by the potter. It should be low in iron (not more than 0.5%). It is suggested that arrangements for testing samples o1 potter's flint be made with the nearest university ceramic laboratory.

(d) **Glass Sand.** Sands containing not more than 0.1% of iron are required for the manufacture of high grade glass. While the tonnage required at present is small and deposits of satisfactory material sufficient for present needs are now being worked, our gradually increasing requirements of this material make it highly desirable that new deposits be located within convenient shipping distance of the New England and Middle Atlantic states. Samples of pure white sand which appear to be suitable for this purpose should be sent to the Bureau of Standards for test.

(3). The Feldspars and Micas.

(a) **Potash Feldspar.** There is a great need for the discovery of new deposits of high grade potash feldspar suitable for potter's use and as a source of potash salts. A good discussion of the feldspar situation is given on pages 173 to 184, Part II, of "Mineral Resources of the United States, 1916." The tests needed are a chemical analysis and a deformation test. It is suggested that arrangements for testing samples of feldspar be made with the Department of Ceramic Engineering of Ohio State University.

(b) **Micas.** There is a great scarcity of large sheets of clear mica which are required for electrical uses. Samples of mica deposits and facts concerning the deposit should be sent to the Bureau of Standards.

(4). Calcium Carbonate.

(a) **Calcium Carbonate Free from Iron.** Material containing not more than 0.01% of iron and not more than 1.5% of magnesia is required in the manufacture of optical glass. The tonnage required is, however, small (about two carloads per annum) and while the situation with regard to this material is by no means acute owing to the fact that ground marble can be employed, a deposit of suitable material conveniently located with reference to the New England and Middle Atlantic states would be desirable. In this connection attention is called to the recent article by C. L. Parsons ("Science," May 24, 1918, page 508), describing a large deposit of Iceland spar recently located in Montana and apparently of sufficient purity to constitute a source of material for the manufacture of Nichols prisms. Arrangements may be made with the Bureau of Standards for testing samples of any new deposits of very pure calcium carbonate.

(5). Bauxite and Other Aluminiferous Materials.

Ample provision for the necessary survey work on these materials is being made by large corporations, which for their own protection may be depended upon to see that ample supplies of this material are available, and it is recommended that no special attention be given to such materials at the present time.

(6). Refractory Materials.

(a). **Magnesite.** This important material used for the manufacture of refractories employed in the steel and copper industries is relatively scarce and very expensive since foreign importation has been cut off. Most of the material now being mined on this continent comes from the Pacific Coast, and additional deposits conveniently located should be looked for. Methods of field work, sampling, testing, etc., should be carried out according to directions which the Bureau of Mines will be glad to supply. It is suggested that sedimentary rocks, frequently classed as marble, limestone, or dolomite, be carefully examined.

(b). **Chromite.** The situation with regard to this material may be regarded as acute. All of the material in sight at present has practically been requisitioned for the manufacture of chrome steel and practically none will be available for the manufacture of refractory brick, paint, chemicals, and for use in tanning. The discovery of new deposits of high grade material is therefore imperative. The Seattle Station of the Bureau of Mines is studying the chrome bearing-sands on the Pacific Coast with reference to the use of this material as a source for chromium. Survey work in connection with this material should be undertaken in co-operation with the Bureau of Mines.

(c). **Graphite.** Deposits of American graphite of a quality approaching the Ceylon or Madagascar deposits would be extremely valuable for the manufacture of graphite refractories, and would effect corresponding relief in the shipping situation. Survey work on this material should be done in co-operation with the Bureau of Mines.

(d). **Zirconia.** This material possesses interesting possibilities as a refractory and the location of deposits of high-grade baddelyite in this country would stimulate the further study of this interesting material. The present cost of this substance, which is obtained only from Brazil, prohibits its consideration as an available material for refractory purposes in the large majority of cases.

(7). Hydrated Silicates of Aluminum and Magnesium.

(a). **Talc.** There is a distinct shortage and a large demand for deposits of talc of very high purity to supply the market formerly taken care of by importations from France and Italy. Arrangements for testing samples of talc can be made with the Department of Ceramic Engineering of the University of Illinois.

(b). **Indianaite.** This material has recently become very important as a war mineral owing to its use in large quantities in the manufacture of munitions. The deposits at present being worked do not have the desired purity and deposits of pure material should, if possible, be located. Freedom from iron is the principal requirement in the case of this material. Arrangements for testing can be made with the Bureau of Standards.

(c) **Halloysite.** This material would be valuable for the manufacture of refractories if deposits of sufficient magnitude to justify working them could be located. Arrangements for testing this material can be made with the Bureau of Standards.

(8). Fluorspar and Cryolite.

(a) **Fluorspar.** This material is required for optical purposes and is used in the manufacture of enamels and glass and as a flux in the manufacture of steel. For ceramic purposes the material should be low in iron (not more than 0.01%) and should contain not more than about 5% of silica. Absolutely clear fluorspar suitable for optical purposes has been valued as high as $30 an ounce. Arrangements for the examination of samples of fluorspar can be made with the Bureau of Standards, or with the Department of Ceramic Engineering, University of Illinois.

(b). **Cryolite.** This important material which is used in the manufacture of enamels and of the metal aluminum, is obtained entirely from Greenland, and while there is no shortage of the material it is obvious that a discovery of deposits of cryolite in this country would help to relieve the shipping situation, and make us independent of foreign monopoly.

(9). Gypsum.

The situation with reference to this material is substantially expressed by the statement under No. 5 above.

(10). Other Materials.

Under this head certain other materials should be added and italicized.

(Continued on page 792.)

WARNING

During a period of four to five years past, we have spent our time, effort and much money in developing for the ceramic industry and other lines, the Underwood Producer Gas Burning System, and bringing in its use with the various plants so established, an unbounded success for the user in the manner we are representing. As a result, it now appears that some of those who until lately out constantly condemned the system as valueless, a failure, etc., are the very ones trying to reap the benefits of the other fellow's efforts by coming out in a similar way, which any one will agree, if such procedure involves infringement of our patents is not fair between man and man.

We therefore desire to inform all members of the ceramic industry in a general way, and others that are now, or may later become interested, that in protecting the interests of all, we have secured through the Federal Government of the United States, a number of basic patent rights, with further applications pending, to act as a safeguard for those contracting, installing and using the system, as well as those interested in furthering the movement for humanity. It is only natural therefore, that any individual or concern attempting to infringe upon such rights, be prosecuted to the fullest extent, which necessitates asking any or all to investigate carefully and satisfy themselves fully before entering into contracts with others for the application and use of any other producer gas system with periodic kilns, whether updraft, round or rectangular downdraft, or muffle kilns.

Patent rights referred to are broad and substantial, and to maintain the interests of all concerned as stated, it is necessary that we protect them to the fullest extent within our power, and which we propose to do.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-
Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

A CONFERENCE HELD IN PITTSBURGH.

(Continued from page 790.)

(a). **Barytes and Witherite.** These materials are used in the manufacture of brick, paint, and chemicals, and in the case of witherite we were largely dependent upon Germany previous to the war. The discovery of new deposits of both of these materials is important and it is suggested that arrangements for testing any samples of such deposits be made after consultation with Dr. T. L. Watson of the Virginia Geological Survey, who has made a special study of these materials.

(b). **Strontianite.** This material is used in the manufacture of glazes and bodies and also in sugar refining and in the manufacture of red fire. Arrangements for testing samples of strontianite may be made with the Bureau of Mines.

(c). **Beryl.** This material is now employed in considerable quanities in the manufacture of certain electrical porcelains. Arrangements for testing samples of beryl may be made with the Bureau of Standards.

II. Report of the Sub-Committee on the Establishment of Testing Stations.

In order to obtain the desired information in regard to the availability of laboratories for testing ceramic raw materials and to determine the number of men that can be accommodated in these laboratories for doing the work, the following questionnaire was submitted to institutions and private companies interested in testing of a ceramic nature or known to maintain ceramic laboratories:

1. Have you a laboratory which is equipped for making a complete ceramic examination of clays substantially in accordance with the provisional tests contained in the report (Jan. 3, 1918) of the Committee on Standards of the American Ceramic Society?

2. Are you able and willing to place your laboratory facilities at the disposal of a ceramic chemist employed to carry out such tests on samples of material collected in connection with the above mentioned survey?

3. How many ceramic chemists could you accommodate in your laboratory in connection with this work?

4. Have you a technically trained ceramic chemist or engineer who would be able and willing to contribute some of his time and experience to getting the work properly started in case your laboratory should be made one of the testing stations?

Laboratories Available.

Replies have been received from the following institutions and firms, all being equipped to do testing, maintaining a ceramic staff, and expressing a willingness to co-operate in the work:

Alfred University, Alfred N. Y., can accommodate five or six men (except during the summer vacation, when summer courses in ceramics are given).

U. S. Bureau of Mines, Columbus, Ohio, can accommodate four men.

U. S. Bureau of Standards can accommodate four men.

The Findlay Clay Pot Company, Washington, Pa., one to two men.

General Electric Co., Schnectady, N. Y., two men.
Iowa State College, Ames, Iowa, four to six men.
Jeffery-Dewitt Co., Detroit, Mich., two to three men.
Laclede-Christy Clay Products Co., St. Louis, Mo., four men.
Ohio State University, Columbus, Ohio, six men.
Rutgers College, New Brunswick, N. J., three men.
University of Illinois, Urbana, Ill., six men.
Oregon Agricultural College, Corvallis, Ore., two to three men.

Laboratories Probably Available.

The University of Texas has plans on foot to establish a ceramic laboratory and will be able to handle from two to four men.

The Mellon Institute expressed a willingness to co-operate, but made no mention of the number of men it can accommodate in its laboratories.

The University of Kansas has laboratories well equipped for doing testing but has no technical ceramic man in charge and no funds at present for doing ceramic work. However, the University of Kansas proposes to take up ceramic work as soon as funds are available.

The following institutions and companies maintain ceramic laboratories with competent ceramic men in charge, but no replies have been received from them:

Harbison-Walker Refractories Co., Pittsburgh, Pa.
The Norton Co., Worcester, Mass.
University of Michigan, Ann Arbor, Mich.

Number of Laboratories and Accommodations For Men.

The number of available laboratories reported to date is 11, and the number of men these laboratories can accommodate, 41 to 46. It is evident that equipment and accommodations for sufficient men can be secured to do the work, but under present conditions the problem will be to secure the men required.

Cost of Testing Clay Samples.

The cost of testing a sample varies, depending upon the nature of the sample and the elaborateness and number of tests made upon it. It is estimated that the average cost of a preliminary test will be from $3 to $5 and the complete test of a clay sample will be from $25 to $30. The cost of testing some clays will be less, while for others the cost will be more.

Recommendations.

It is recommended that the routine testing of clays be assigned principally to university and private laboratories and that testing of other ceramic materials be confined largely to the Bureau of Mines and the Bureau of Standards.

It is also recommended that the clay samples gathered by a State Survey be submitted to a laboratory within the state, if such laboratory is available and can handle the testing work satisfactorily. If such laboratory cannot do the work efficiently for any cause (as for example, being already loaded up with testing work), it is recommended that the samples be submitted to the next nearest laboratory capable of handling the work. In any case, a standing committee on Testing and Testing Stations should be created to supervise the distribution of the samples.

The Decision of the Conference Regarding the Establishment of Testing Stations.

After discussion, the conference voted: (1) That the government laboratories be used only for the testing of ceramic materials other than clays. (2) That testing stations be established at all of the laboratories of departments of Ceramic Engineering of educational institutions, and that the distribution of samples to these various testing stations be regulated by a standing committee appointed for that purpose. (3) That the establishment of additional testing stations be made dependent upon the growth of the work, and that the above standing committee be authorized to establish such additional stations whenever the need for same shall arise.

Messrs. Hice, Stull and Bleininger were appointed as a standing committee on the supervision of testing stations and the distribution of samples.

Recommendations Concerning Standard Methods for Testing of Clays.

Speaking for the Committee on Ceramic Chemistry, Mr. L. E. Barringer presented the following recommendations concerning the adoption of standard methods for testing clays, to be followed by all of the testing stations:

1. Each sample of clay submitted for test shall first be put through a preliminary examination covering the determination of plasticity, color on burning, refractories, and such other simple tests as may be required to determine whether (a) the clay should be classified as a china clay, ball clay, plastic fire clay, or other clay for which additional supplies are needed, or whether (b) the clay belongs to the class of common brick or stoneware clays of which abundant supplies are known to be available.

2. Clays which in the preliminary examination are found to belong to the latter class need not be examined further at the present time, but the sample can be labeled and set aside for future study.

3. All samples of clay which in the preliminary examination are found to belong to the first group shall then be put through a complete series of standard ceramic tests.

4. It is recommended that careful and detailed directions for carrying out both the preliminary examination and the complete series of ceramic tests be drawn up by a committee appointed for that purpose, and that all testing stations follow closely the directions prepared by that committee.

Statement by President Staley of the American Ceramic Society.

President Staley, of the American Ceramic Society, was called upon by the chairman to make a statement concerning

(Continued on page 797.)

CONSERVE.

FUEL--LABOR--TIME

BY INSTALLING THE

"MINTER SYSTEM."

THE APPLICATION OF CONTINUOUS BURNING TO

ROUND DOWN-DRAFT KILNS.

This New Application has been in actual operation for over a year in our Plant, with the result that its efficiency and pracitability has been established beyond all experimentation.

IT SAVES MONEY by reducing labor, fuel, time and expense in burning, and in producing a product which is more evenly and perfectly burned.

"THE MINTER SYSTEM" may be installed at comparatively small cost on Round Down-Draft Kilns already built, but when installed in New Construction "THE MINTER SYSTEM" results in a material reduction of building cost, on account of the fewer number of kilns required for desired output.

WRITE US FOR FULL DETAILS.

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FLINT RIVER BRICK CO.,

Albany, Ga.

BURNING CLAY WARES.

(Continued from page 745.)

cooled and loaded out, and the setting returns to the original starting point.

If the market is good the shed will be kept clear for the setting until late in the fall, in some instances throughout the winter where winter work is possible. If the bricks are not moved, the season closes when the setting overtakes the drawing and the shed is full. This is the common-brick continuous kiln operation, but the individual kiln is periodic and not a continuous kiln, as we ordinarily and properly designate continuous kilns.

The arrangement of the kilns depends upon the layout of the yard. Sometimes the kilns are endwise to the loading track on one side and to the factory on the other side, and some plants—partly rail shipping and partly direct delivery by wagons, or all wagon delivery—have the kilns distributed around the factory on two or three sides.

If scoved kilns or the permanent wall up-draft kilns produced as good a product as other types of kilns, they would find a wider use and would be difficult to displace. Unfortunately, they do not give the results. The arch bricks, which in effect are a continuation of the furnace walls, are checked, spalled and blackened by the fire on the end exposed to the fire, and where the shrinkage is considerable they are wedge-shaped. The top bricks, often several courses deep, and the sides and ends are almost invariably soft, and thus the percentage of high-grade, hard, uniform-colored bricks is greatly reduced, in the face of a market continually calling for the better quality product.

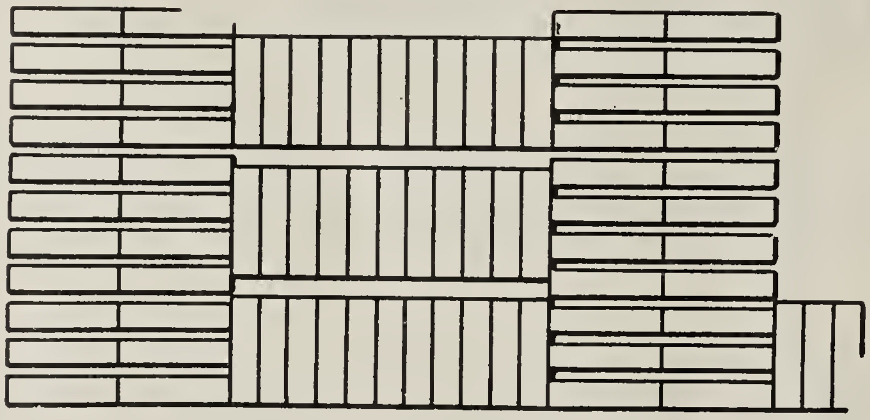


Fig. 45.

Kiln Sheds.

We frequently find factories where the kilns are not protected by sheds. The bricks are set in the open, and after the first bench is set and cased, it is covered with boards or often with canvas, which is a very unsatisfactory arrangement, resulting in considerable loss during inclement weather and frequent delays in the setting operations.

The usual arrangement is a large shed with board roof completely covering the kiln, with lower shed roofs on either side to cover the fire pits. The main shed roof has a monitor in the center to take away the gases and watersmoke escaping from the top of the kiln. Unless the shed roof is high above the kiln, it is necessary to remove the roof boards during the high fire stages, particularly toward the latter period of the firing, when the top courses reach the finishing temperature. Such a shed is illustrated in Fig. 46.

Setting.

It would too greatly extend this article to describe and illustrate in detail the various settings of scove kilns. Each district has some special feature in some part of the setting which may be an advantage with the fuel used and the product burned, but which would be of little or no value in other districts.

Figs. 39, 40, 41 and 42 illustrate common-brick setting in one district.

The end bench is usually one and one-half brick. All the bricks forming the arch are headers. The first course is set single or in pairs, as shown, spaced and lined up to a straight edge on the arch side. This is backed up by two stretchers to carry the tie when the step-off course is reached. These stretchers should not be placed tight end to end, but instead should be separated about 2 inches to form vertical flues, and care should be taken in setting these bricks that the flues connect with the spacing between some of the header courses, in order to get fire to the end wall.

The second, third, fifth and sixth courses are set headers, in pairs, and spaced as shown in Fig. 40. The fourth and seventh courses are set tight. On top of the seventh course each course is projected into the arch space, which is closed on the twelfth or fourteenth course, depending upon the width of the arch. The eighth, ninth, eleventh and twelfth courses are in pairs, and spaced. The tenth and thirteenth courses are tight. This setting, it will be noted, closes the top of the arch tightly, as shown in Fig. 41, and the flames cannot take a direct course upward through the top of the arch, but instead are deflected to either side and rise through open checker work. This method of setting just above the arch closure course is an excellent one, but not common practice.

Where it is desired to have some draft upward through the top of the arch, the closure is on the fourteenth course, which is spaced, and the tight courses under it not being in touch end to end, provide draft spaces.

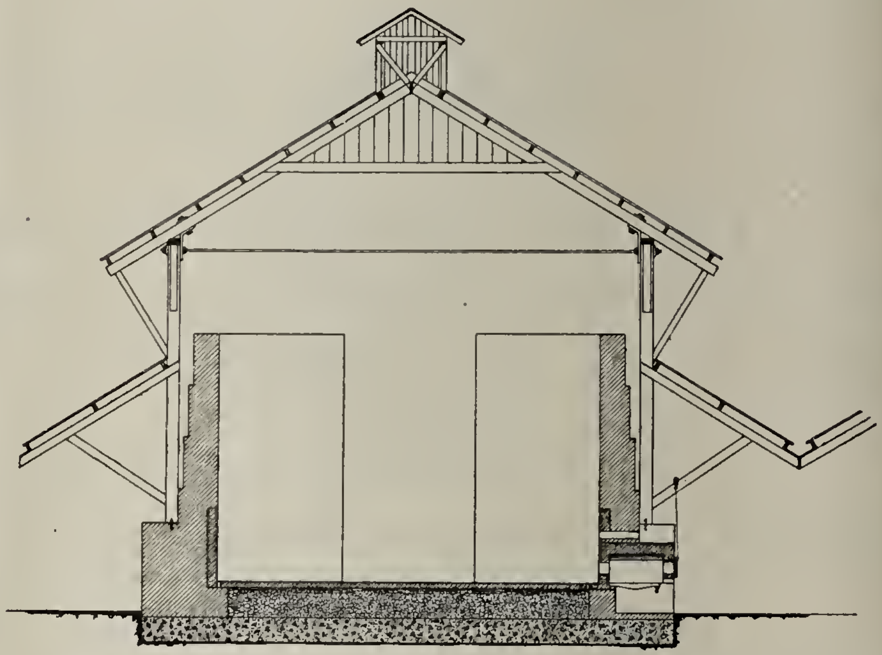


Fig. 46.

The end bench, from the seventh course, is built up vertically on the outside by means of skintled bricks (set at an angle), stretchers and headers, or broken bricks, as may work out best.

When the closure course is set on the end bench, the second bench is started.

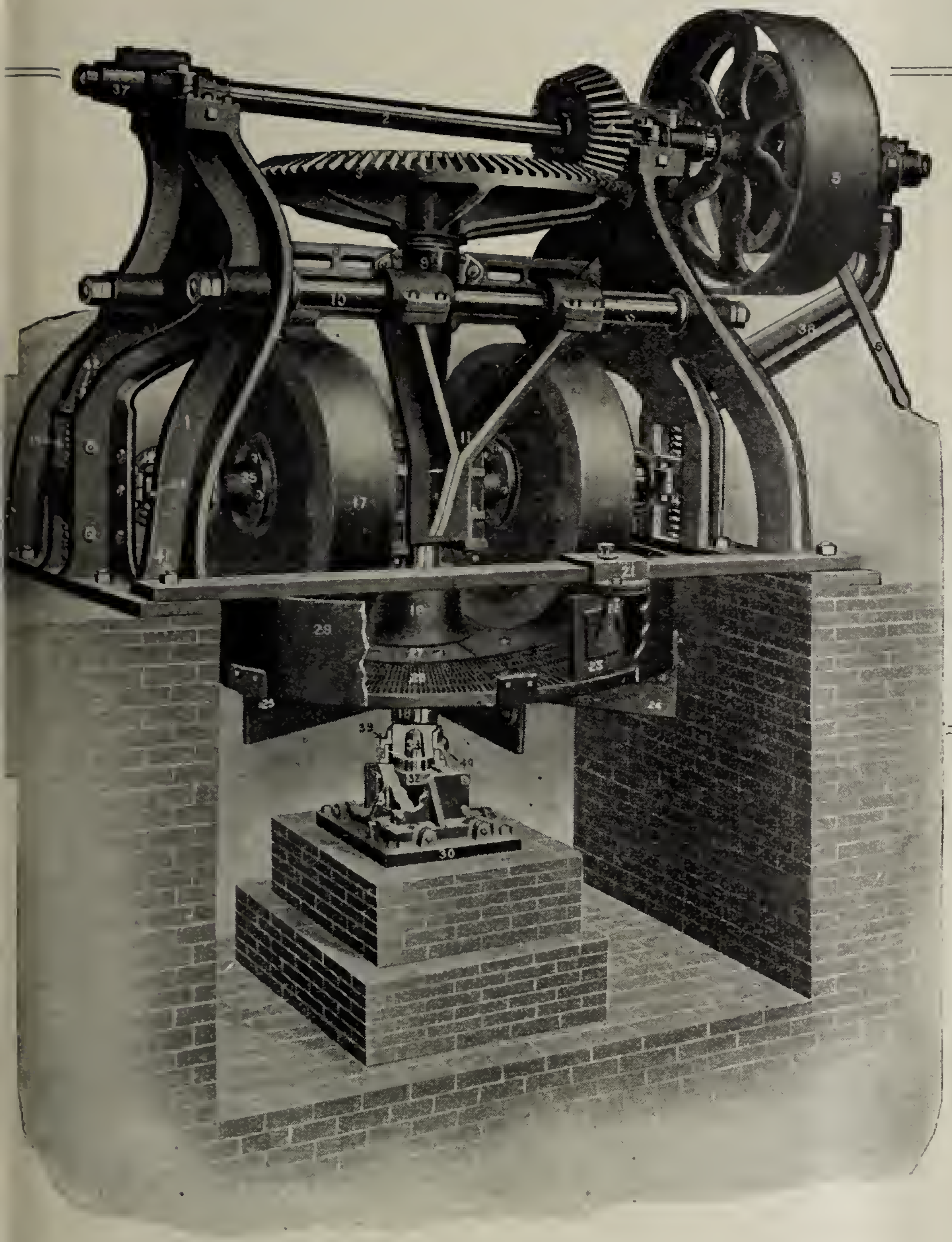
It is considered best not to have the benches in whole brick lengths—two, three or four, as the case may be—but instead to make them two and one-half bricks, three and one-half, etc.

This permits the use of a single or double stretcher in each course, which, should there be any tendency for the flame to draw through from one arch to the next, serves as a baffle to deflect the gases upward. Experienced brickmakers consider this important, but it is a question. (Very satisfactory results have been obtained by a setting which we will describe, the purpose of which is to provide flues connecting the several arches.)

The arch facings are a duplicate of the end bench, and the space between them is filled with stretchers and headers as

(Continued on page 796.)

THE WONDER WORKER



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It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

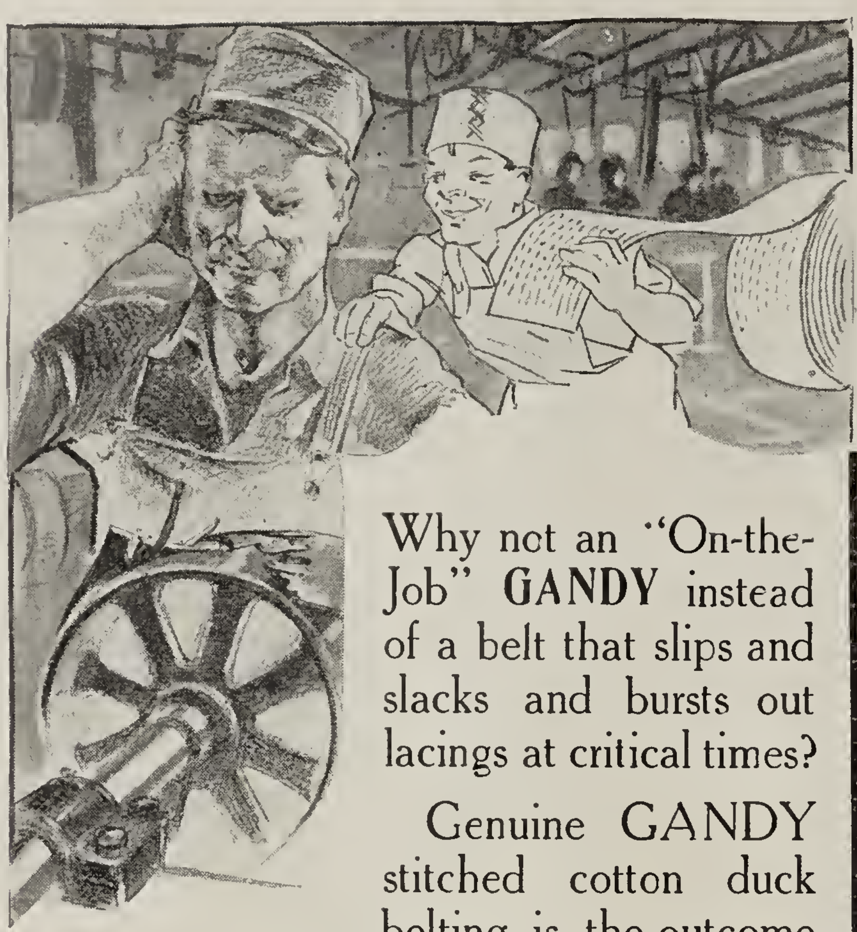
Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.



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GANDY Stitched Cotton Duck BELT

BURNING CLAY WARES.

(Continued from page 794.)

may bond to the best advantage, and all spaced either singly or in pairs.

When the second bench is brought to the level of the end bench, the setters stand on the second bench and the setting is carried to higher levels, usually in three-brick benches, which make a good working width, and, when bonded in, forms a substantial column.

From about midway of the height to the top, the end bench and sides are drawn in to form a battered wall. The end and sides out to the face of the setting are built up first in simple checker work, carefully bonded, leaving a rectangular space in the heart of the kiln.

This central space is sometimes filled with all skintled setting, as shown in Fig. 42, the advantage of which is rapid work. A skillful setter can toss five or more bricks into place and separate them at the same time. Checker work, Fig. 39, the bricks being set singly in alternate courses of headers and stretchers, is common practice. In such method the setting is built up in blocks three brick square, and the setter can work from the front in setting header courses and from the side in setting stretchers, and thus does not have to bend his wrists, and can handle four or five brick at a time, as in the skintling method. Where the bricks have a tendency to kiln mark, or become discolored by the flame, and it is desired to get a higher percentage of first quality facing bricks, the headers are set in pairs two courses high, and faced, alternating with double stretcher courses similarly set, or a single stretcher course.

Figs. 43, 44 and 45 show a special setting mentioned above.

The arches are faced with header courses, as in the first method of setting, as shown in Fig. 44, set singly or in pairs. In this we find considerable difference in practice, some localities setting the spaced arch bricks in pairs, single courses, others in pairs, double courses, faced, others single bricks in single courses, others single bricks in double courses, faced, and others a combination of single and double courses. The feature of the setting in Figs. 43 to 45 is that the interior of each leg is set solid with stretchers from arch to arch, but across the kiln each block of stretchers is spaced about 1½ inches from the next block and the setting is worked out to connect these flues with the spaces between the header courses in the arch facing, thus connecting each arch with the adjacent arches. The setting above the arches is such as to give a maximum quantity of face bricks.

In some districts the two top courses under the platting are set closer than the usual spacing, the purpose being to check the flow of the gases at the point of escape and give greater opportunity to recover the heat from the gases. This is the purpose of the platting, and the closer setting of the top two courses increases the effect of the platting.

In some yards it is customary in the latter stages of the burning to cover the top of the kiln with dirt or ashes to hold back the heat, and such covering results in a harder burned product on top, but the work of putting on and removing the dirt, and the dirt and dust sifting through the bricks when they are being drawn, offsets the value of the harder product and the use of such dirt covering is not common.

However, when a hot spot appears on top, indicated by excessive settling, such spot is covered with dirt to check the draft at that point and to drive the heat to the surrounding cooler areas.

(To be continued.)

BUILD WITH BRICK

A CONFERENCE HELD IN PITTSBURGH.

(Continued from page 792)

the work of that society and the way in which it might be of assistance in connection with the proposed survey work.

President Staley stated that the society stood ready to give any assistance in its power to the proposed survey and explained that it could probably be of greatest assistance through the activities of its Committee on Standards. This committee, which has been at work for about a year, has issued a preliminary report giving tentative methods for testing clays. It expects to continue this work and to issue reports from time to time giving tentative methods for testing other ceramic materials and ceramic products. These methods after undergoing probational use will finally be revised and issued as the standard methods of the society. This committee will gladly co-operate with the state geologists in working up methods of testing the samples which the geologists collect and in determining what methods of testing are necessary and advisable for the various materials. At the present time the Committee on Standards is organized with the following sub-committees:

(1) Electrical insulators, (2) chemical porcelain, (3) sheet and steel enamel, (4) load tests for refractories, (5) the preliminary examination of clays, (6) slagging tests for refractories, (7) sampling, (8) plasticity of clays, (9) nomenclature, and (10) revision of tentative methods.

The sub-committees which will probably be of special service to the Association of Geologists are: (1) Sub-committee No. 5 on the preliminary examination of clays, George H. Brown, of Rutgers College, New Jersey, chairman, and (2) Sub-committee No. 10 on the revision of tentative methods, Frank H. Riddle, Bureau of Standards, Pittsburgh Laboratory, chairman.

It is also possible that some assistance may be rendered by the Society's Committee on Military and Economic Preparedness which has for its duty the study of the situation in regard to the ceramic materials with relation to the war and to the reconstruction period which will follow the war. Mr. A. F. Greaves-Walker, United States Fuel Administration, Washington, D. C., is chairman of this committee.

Announcement of the Appointment of a Standing Committee on Standard Methods of Testing Clay.

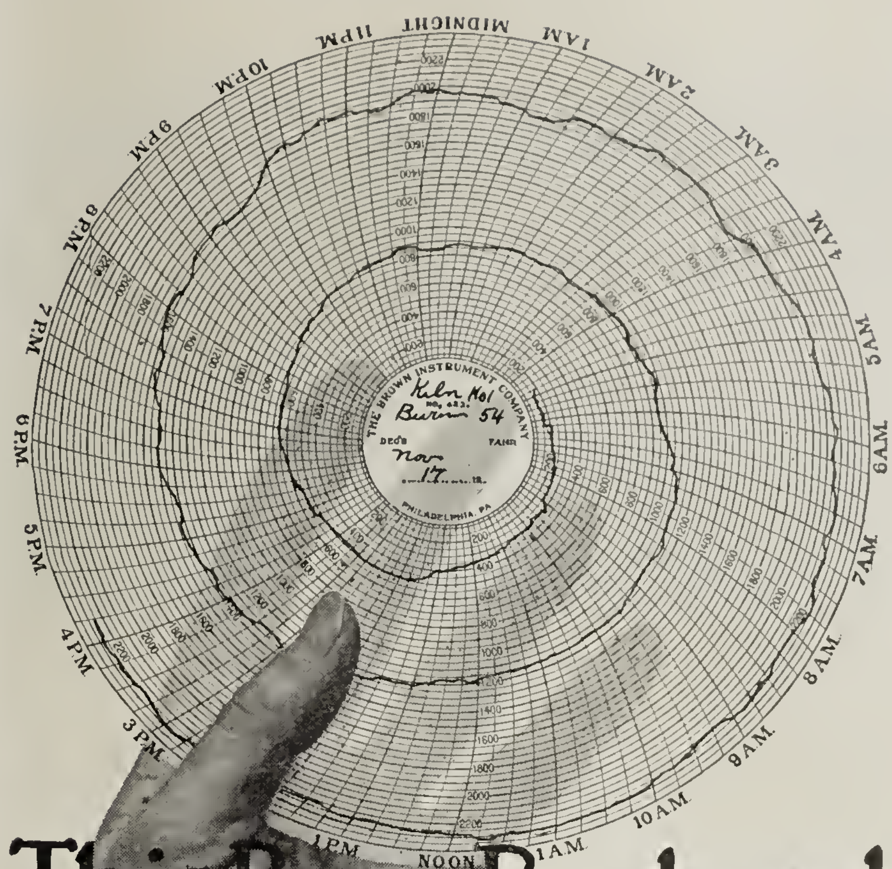
After consultation, President DeWolf, of the American Association of State Geologists, and President Staley, of the American Ceramic Society, announced the following standing committee on Standard Methods of Testing Clay:

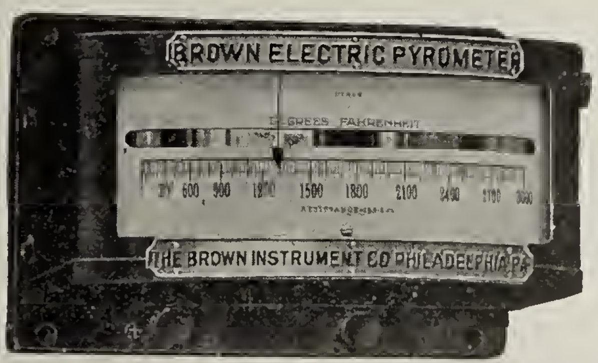
A. V. Bleininger, United States Bureau of Standards; R. T. Stull, United States Bureau of Mines; Heinrich Ries, United States Geological Survey; R. H. Hice, American Association of State Geologists; George H. Brown, American Ceramic Society.

The committee was instructed to draw up detailed directions both for the preliminary examination and the complete testing of clay samples, which directions were to be followed by all the testing stations. The committee was also instructed to draw up uniform report forms to be used by all testing stations in reporting the results of clay tests. The report of this committee will be published in our next issue.

GEOLOGY OF JACKSON COUNTY, MISSOURI.

One of the elaborately prepared and substantially bound volumes of geological data and information coming our way recently, profusely illustrated and thoroughly charted, is that of the Geology of Jackson County, Missouri. It is published by the Missouri Bureau of Geology and Mines, Rolla, Mo., of which H. A. Buehler is director and state geologist. The work was prepared by Walter Edward McCourt, assisted by M. Albertson and J. W. Benne. The work is accompanied by a geological map of Kansas City, Mo., and also Jackson county, with a chart of cross sections. It is a good work from a great state that has a reputation of being thorough as well as extensive in its clay and mining operations.





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Baird Machinery & Mfg. Co...... 820
Ball Engine Co.................... 726
Barber-Greene Co................ 728
Barr Clay Co., The............... 732
Books for Clayworkers 812
Bonnot Co., The.................. 719
Boss, John C...................... 798
Brewer, H. & Co................... 815
Brown Instrument Co., The..... 797
Build With Brick.................. 704
Caldwell, H. W. & Son Co....... 802
Cameron Clay Products Co..... 732
Carnell, George.................. 804
Ceramic Supply & Const. Co.... 804
Chambers Brothers Co.......... 735
Chase Foundry & Mfg. Co........ 820
Chattanooga Paint,Co.......... 801
Chicago Brick Machinery Co,... 820
Chisholm, Boyd & White Co..... 722
Danville Brick Co., The.......... 732
Dennis, F. W...................... 802
Dickinson, W. W. Jr............. 734
Didier-March Co 809
Drying Clay Wares.............. 808
Dunlap Manufacturing Co....... 805
Eagle Iron Works................ 806
Eastern Machinery Co., The.... 811
Engelhard, Charles.............. 803
Fate, J. D. Co., The.......... 818, 8 9
Flint River Brick Co............. 793
Frost Mfg. Co., The.............. 817
Freese, E. M. & Co............... 816
Gandy Belting Co................ 796
Geijsbeek Engineering Co....... 806
Harrington & King Perforating Co.............................. 720
Hoehne, Richard B. & Associates 806
Important Federal Laws........ 804
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Kushequa Keramic Co........... 732
Lake Shore Shale Brick Co..... 7 2
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Leary Mfg. Co., W. J............ 731
Lovejoy, Ellis..................... 807
Mantel, Tile and Grate Monthly. 802
Manufacturers Equipment Co., The............................. 791
Marion Machine Foundry & Supply Co....................... .. 798
Mathews Gravity Carrier Co.... 720
Mayer, C. P....................... 733
McAvoy Vitrified Brick Co...... 732
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Murphysboro Paving Brick Co.. 733
National Paving Brick Manufacturers' Association.............. 732
Ohio Galvanizing & Mfg. Co., The 805
Parker-Russell Mining & Mfg. Co. 801
Phillips & McLaren Co........... 802
Potts, C. & A. Co................. 813
Purington Paving Brick Co..... 73[illegible]
Ricketson's Mineral Paint Wks. 798
Rodgers, L. E. Engineering Co.. 721
Roessler-Hassslacher Chemical Co , The......................... 801
Shawmut Vitrified Paving Brick Works............................ 732
Standard Dry Kiln Co., The.... . 736
Steele, J. C. & Sons.............. 718
Stevenson Co., The.............. 795
Terre Haute Vitrified Brick Co.. 733
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SEE TABLE OF CONTENTS, PAGE 768.

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Applies to all types of kilns and will save **HALF** in your cost of burning.

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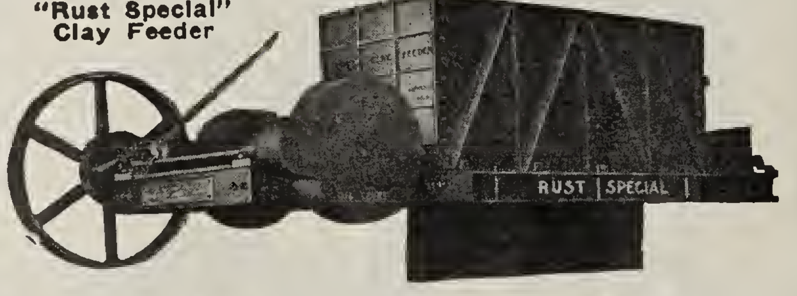

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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. LXX. INDIANAPOLIS, IND., JULY, 1918. No. 1.

AMERICAN CERAMIC SOCIETY MEETING

A Most Interesting Four Days Program Enjoyed By Nearly A Hundred Ceramists Who Visited Many of the Splendid Factories in Zanesville, Roseville, Crooksville and New Lexington, Ohio, June 25, 26, 27 and 28th.

THE TWENTIETH annual mid-summer meeting of the American Ceramic Society was a splendid outing and a source of much new information for ninety-three happy though serious minded ceramists, who gathered at Zanesville, Ohio, June 25th, and enjoyed four days brimful of sight-seeing trips, section Q meetings and inspection tours.

Not since the New Castle, Pa. meeting in 1915, has there been such a large attendance nor as interesting or instructive a program. A glance over the registration given following this article will surprise the older members of the Society in the fact that very few of the old timers were present. This was partly due to the fact that there were several other meetings the date of which conflicted with the time of the mid-summer meeting. Sickness prevented Secretary Binns being present, while others expressed their regrets by letter, stating business conditions would not permit of their absence from the plant. Such prominent members as Major Orton, Prof. Bleininger, R. C. Purdy, Secretary Binns, Messrs. Watts, Barringer, Walker, Gates, Hice, Richardson, Staley, Prof. Parmelee and Prof. Brown and some of the other faithfuls could not attend, but enthusiasm and earnestness was not lacking in the new delegates, this fact in itself showing the growth and health of the Society.

Visiting Ceramists in Kiln Yard of Ludowici-Celadon Roofing Tile Plant.

Much credit for the success of the meeting is due the committee on arrangements, especially its chairman and the proprietors of the plants in and about Zanesville, who donated their time and money to make the ceramists' stay pleasant and profitable. The committee on arrangements consisted of F. K. Pence, Chairman, Zanesville, American Encaustic Tiling Co.; C. D. Fraunfelter, Zanesville, Ohio Pottery Co.; R. D. Landrum, Cleveland, Harshaw, Fuller & Goodwin Co.; Ellsworth Ogden, Columbus, Buckeye Steel Castings Co; John Sanders, Moundsville, W. Va., United States Stamping Co. and Charles W. Berry, St. Louis, Laclede-Christy Clay Products Co.

Tuesday morning, a large delegation was on hand, thronging the Hotel Rogge lobby, where F. K. Pence placed in the button hole of the lapel of the coat, a neat clay button, blue glazed with the wording Zanesville, Ohio, 1918, A. C. S. This clever souvenir which served as a delegate's badge and admittance insignia to any of the ceramic plants in that section, was made and donated by the American Encaustic Tiling Co.

At ten o'clock, the large crowd separated into groups, some going by street car, others in automobiles, to the plant of the Mosaic Tile Co., where the remainder of the morning was given over to an inspection tour of this most interesting factory, which manufactures over five million square feet of floor tile annually. The ceramists were received and escorted through the various departments by N. E. Loomis, J. M. Martin and W. M. Shinnick.

Naturally, with scarcity of labor and the difficulty of getting fuel, together with observance of the Government's curtailment order, the plant, like others visited was being operated to a 50 per cent. capacity. Several of the presses were idle, but those in operation were doing maximum work. This portion of the plant was the most attractive feature to the delegates, who although they visited every department, from grinding through filter press and glaze preparation room, pressing, seggar making, kilns and finally through the immense storage stock room, lingered longest near the hand and machine presses, watching the men and women in their active work.

In the pressing department, dozens of both hand and machine presses are used. Small hexagonal floor tile were being made on the hand presses, forty-two pieces being made at a time. The dies were heated by gas, thus preventing the clay from sticking and doing way with the constant changing of dies. A husky masculine kept on the move shaking the finely pulverized clay into the mold and swinging the large lever back and forth which brought the die down and pressed the clay into small tile. On the other side of the machine an absorbed maiden received the small pieces of tile, allowing them to be pushed out on an opened folding tray, where, with one stroke she dusted same. As soon as the forty-two pieces were dusted, the tray was folded together, 21 pieces turned over onto the other 21 pieces, the tray and contents then lifted over to the table where the seggars were being filled and the bottom of the tray pulled out, leaving the tile piled ready for a second girl to place in the seggar. After emptying, the bottom was pushed quickly back into the frame and the tray opened and another forty-two pieces secured. The machine presses were turning out thousands of pieces of various sizes of walls and floor tile.

Of much interest also, were the two tunnel kilns used for biscuit and glost. These were the American Dressler Tunnel kilns, which are a muffled type, 300 feet long and applicable to annealing of tin and steel sheets as well as burning ceramic ware. Messrs. C. J. Kirk, Treasurer, and W. S. Kupfer, President, represented the Dressler Company and explained the many points of the kiln, not only on this plant, but at the American Encaustic Tiling Co. and Roseville Pottery, where two and one are used respectively, the former gas-fired, while the latter employs producer gas. They are building at the present time fourteen kilns in this country and report satisfied customers. They claim for this kiln a saving of 66% in time of operation and 20% in gas. Sixty hours is the required time for biscuit firing to cone 4, the glost taking 42 hours to cone ol.

After visiting the display room of the Mosaic Tile Co., where were exhibited the various wares made, including floor and wall tile for all treatment of any building requirements, bath room fixtures, such as soap dishes, wall pockets, paper holders, tumbler receptacles, also tile for swimming pools and tile for government work on freight boats in officers' quarters and cook houses, the ceramists returned to the hotel to satisfy the inner man.

Brush-McCoy Pottery Visited.

At two o'clock, the delegates went in a body to the Brush-McCoy Pottery plant, where they were given a cordial welcome by Mr. G. S. Brush, who escorted them to the display room and presented each visitor with a souvenir in the shape of an American bee, made of clay with white stars upon blue wings and red stripes around the body. A short humorous talk was made on the general characteristics of the bee, concerning its thriftness, stick-to-it-tiveness and the sting which it will give the Kaiser. The stay in the pottery was most pleasant and interesting, side remarks on various lines of ware keeping the crowd in good humor and wondering when the next laugh was coming forth. In the excursion through the plant, the delegates witnessed the manufacture of the following ware: "Dandy-line", standard yellow cooking ware; "Nurock" ware, a good hard burned utility ware similar to Old English Rockingham; "Columbian", blue band yellow bowls, preserving and cooking ware; "White Stone", Bristol cooking and toilet ware. Various colored jardinieres, pedestals, umbrella jars, cuspidors, pitchers, cereal jars, hanging baskets and garden pottery.

Before leaving this factory, the ceramists were invited to fill their pockets with clay birds which find a welcome place in the house on flower dishes, etc.

Inspection Tour of Floor and Wall Tile Plant.

Immediately across the road was the open door of the J. B. Owens Floor and Wall Tile Co., through which the ceramists were escorted by E. E. Lewis, superintendent. In this plant we visited every department in the manufacture of floor and wall tile and inspected the two Owens Tunnel Kilns under course of construction. Mr. W. H. Dunn, representing the J. B. Owen Continuous Kiln Co. of Metuchen, N. J., in discussing the merits of the kiln, declared their kiln was less expensive in its construction than the other tunnel kilns, yet it assured a saving of 50% in labor, 75% in fuel and 75% in seggars. He referred to the kilns of the Jackson China Co., Falls Creek, Pa., where in their old four periodical kilns the best they got was 65,000 per year, while with one Owens kiln burning both biscuit and glost, they are now getting over 300,000 annually and at the above saving figures. By stacking their seggars and not wadding them, made a gross saving of 50 cents a car. Mr. Dunn claims an even distribution of the heat with 12 cones down in the biscuit and 10 cones in the glost.

High Grade Chemical Porcelain Made in Ohio Pottery Co. Plant.

Adjacent to this plant is that of the Ohio Pottery Co., through which we were escorted by Mr. John J. Herold, the superintendent. Here was being manufactured a large line of cooking ware and chemical porcelain, much of the latter being used by the Government. Of much interest were their large crucibles, evaporating dishes, and goods used in chemical laboratories. These are all cast and require skilled labor in the making. It is claimed for their laboratory porcelain that it is the most resistant, highest fired and most homogeneous ware made in America.

A Real Ceramic Banquet.

Returning to the hotel, the ceramists prepared for the banquet which was held in the main dining room of the hotel at 7:30. This was a most enjoyable occasion, the feast was unusually good and splendid music, including singing by one of Zanesville's most popular vaudeville soloists, delighted all in attendance. Mr. F. K. Pence acted as toastmaster, Mr. George Young, president of the Roseville Pottery, made the speech of welcome, which was responded to by Mr. J. B. Shaw, acting Secretary in the absence of Prof. C. F. Binns. Letters of regret from absentees were read, including an important communication from Mr. A. F. Greaves-Walker, as follows:

"Homer Staley, Pres. American Ceramic Society.

"My Dear Homer:

"As you no doubt will attend the summer meeting at Zanesville, may I ask you to present to those present an outline of the work of the new Industrial Furnace Division. As at present outlined, the country will be divided up into districts headed by a district chief who will be responsible directly to the Conservation Division at Washington. The new Division will attempt to get the manufacturers using fuel for any other purpose than that of producing power, to practice greater conservation. This will be done by means of publicity, bulletins, inspection and instruction. All plants, including of course those in every branch of the ceramic industry, will be inspected, and rated according to their efficiency in the use of fuel; the power end will be handled by a separate division.

"When a plant is found to have inefficient kilns or dryers, or is practising inefficient burning, methods will be suggested for improvements and every effort will be made to have manufacturers adopt the suggestions without the use of pressure. It is not the intention to force manufacturers to invest in expensive equipment but rather to improve the equipment they already have and the methods they are using.

"It is expected that the field force will be made up of volunteers, and technical men are especially desired for these positions, and it is hoped that these volunteers will be numerous enough to be given territory in the vicinity of their headquarters so that it will only be necessary for them to put in two or three days a week for the Fuel Administration Engineers. All traveling expenses will be paid by the Government.

"I should like very much to have you call for volunteers for this work from among those present, and I think that every man will realize that this is an opportunity to do something for the country in a time of stress. Practically the only hope of the non-war industries, in some sections of the country, continuing to exist, is that greater economy in the use of fuel be practiced. It is, therefore, really a matter of the manufacturers preserving themselves by assisting in this work.

"I am sure also that the Fuel Administration would appreciate it very much if such a society as ours passed a resolution backing up this effort.

"Any volunteers which may come forward may address me direct and I will put them in touch with their District chiefs. Thanking you very much for anything you can do to assist in this matter, and regretting that I cannot be at the meeting on account of having promised Brown to attend his meeting at Trenton, I am,

Yours very truly,
A. F. GREAVES-WALKER."

Action on this proposition was taken later in the week.

1. Watching canal boats pass through locks near boat landing. 2. Boarding steamer Louise for trip on Muskingum River. 3. A short stop near locks. 4. Board of Trustees in private session.

A number of men were called upon for brief speeches which ended in a regulation Rotary Club roll call, each individual arising, giving his name, address and business and such comments as came to mind. This developed a very happy vein of humor, mingled with patriotic utterances. A feature showing the vigorous condition of the Society, was a report by Thomas Sant, telling of the work of his membership campaign in and about East Liverpool. Assisted by Robt. T. Hall, thirty-one new members were added from this district alone, including twenty from East Liverpool, four from Sebring, two from Newall, W. Va., one from Chester, W. Va. and four from Wellsville, Ohio. The Sebring members were secured by Mr. C. L. Sebring and Mr. Sant. Reports of the various local sections were interesting, the fact being brought out that the

Central Ohio section was indeed a very active one, never having less than thirty members at their meetings.

Mr. Ellis Lovejoy, the oldest member in point of attendance, and one of the organizers of the Society, made an interesting talk reminiscing on the days gone by and referring to the old members conspicuous by their absence, some having passed to the Great Beyond, while others were out of the business or unable to be present. He paid a tribute to former Secretary Edward Orton, Jr., which received a hearty applause from all present.

Roseville Pottery Co's. Plant Holds Much of Interest to Ceramists.

Wednesdaymorning, the ceramists made an inspection tour of the Roseville Potter Co's. plant. This is an immense plant, manufacturing a large line of art pottery and cooking ware. A visit to their large stock rooms covering many floors revealed many interesting facts. One discovery was that this is the plant which makes the Fatima Cigarette match holders and ash trays. It is on this plant that producer gas is employed in connection with their tunnel kilns. The company claims the saving of $2,000 per month in fuel and the replacing of eight round down draft kilns by one tunnel kiln.

Trip Through Largest Mosaic Tile Plant in World.

The remainder of the morning was spent in the immense factory of the American Encaustic Tiling Co., a short walk from the Roseville Pottery. The ceramists were divided into groups at the office of the plant and escorted through by Messrs. J. D. Whitmer, Wm. McCoy, C. Jones, Chas. Niblock, Boris Trifonoff, Donald McCann, Roy Bauer and F. K. Pence.

From grinding department to exhibition room, the journey was full of keen interest. Thousands of tons of clay and material from rich deposits in New Jersey, Ohio, Georgia, Florida, Kentucky and Tennessee are received at this factory, making necessary an immense storage plant; a brick building 300 feet long, containing a series of bins on either side of a long electric transfer runway (depressed tracks). The materials needed are gathered in the proportions desired, a scale and weighing apparatus being conveniently located on the transfer which holds the car that takes the material to the succeeding department in the manufacture of various classes of tile being made. The materials are first pulverized and screened before being delivered to the storage bins. In the preparation rooms are large blunging mills and sifting tanks, which remove all foreign substance and work the ingredients into a homogeneous mass. From here the clay slip mixture passes through agitators and air pressure receivers into large filter presses. More than 800 yards of cotton duck are used in filter press sacks, covering leaves or compartments of one of these filter presses alone.

After the water is removed by air pressure the leaves of clay are taken from the filter presses, placed on cars and dried in a dryer heated by steam. From here the dried clay slabs are taken to the crushing and sifting department where the material is made into a finely powdered semi-dry clay for use in the pressing rooms. The material follows in one direction, there being no loss in time or motion, the retracting of steps being entirely eliminated. The pressing room covers a large floor of more than 14,000 square feet where are installed hand, electric and hydraulic presses, all built by the American Encaustic Tiling Co., which owns and operates an immense machine and repair shop on their property. Of particular interest was the cam arrangement on the presses which kneaded the air out of the powdered clay just prior to the pressing. The seggar making department also held much interest. Here they were making them by machine, the several different motions in the operation being important parts in forming same. Passing through the drying rooms where thousands of feet of various kinds of tile were being dried on steam racks, the ceramists visited the kiln department, where the seggars of tile from the pressing room and drying room were being carried to their respective large kilns for the bisque burning.

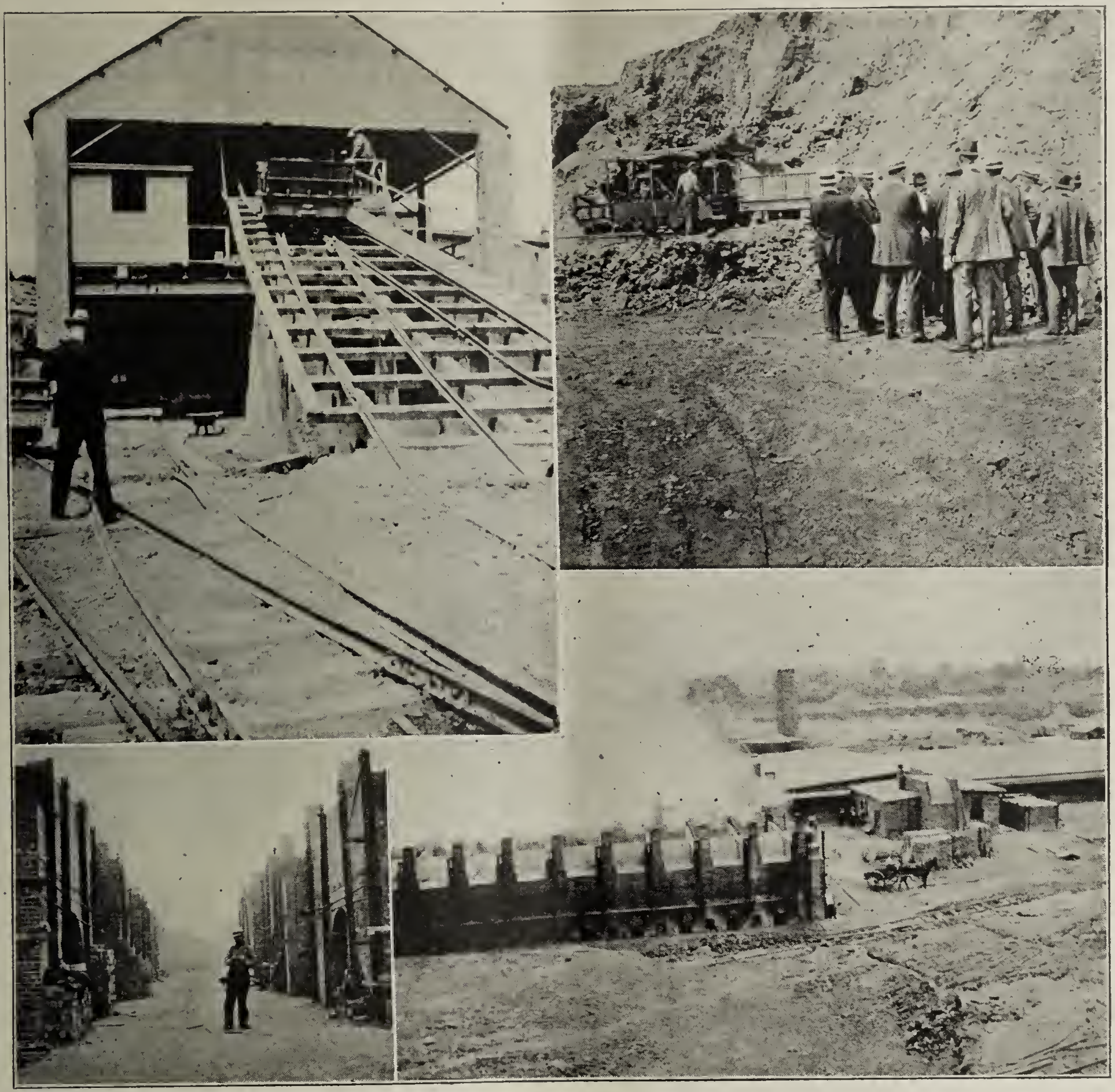
The assorting room where the tile were being sorted for sizes, shapes and imperfections held much interest for the ceramist, especially was this true of the sizing machine, a patented machine built by the American Encaustic Tiling Co. This automatically measured and sized the tile, stamping the various pieces automatically with the letter or combination of letters which indicated their true status.

The glazing and decorating departments where large glazing mills and dipping baths are located, consumed considerable time in our trip through the plant, as did also the stock and exhibition rooms, and the department where geometrical ceramic moasic patterns were being prepared ready for the consumer. The cooperage and packing departments, important points in the plant, were visited before we reached the cool office, where the proprietors were given a vote of thanks for the courtesies extended before returning to the hotel to get a much needed rest, as well as a silent dinner.

1. Grinding Department Burton-Townsend Plant No.1. 2. A. L. See Employed Here 35 Years. 3. Pit and Incline at No. 2.

An Enjoyable Trip on Muskingum River.

The committee on arrangements used forethought in providing the afternoon's entertainment, this being free from much exertion except a mighty hill climb near the summer quarters of the artist Howard Chandler Christy, a two hour's ride down the Muskingum River. This was a delightful ride on the river boat Louise, where many were given their initiation into the opening and closing of the river locks. The trip afforded the Board of Trustees time for a private committee meeting and the other ceramists section Q meetings, a loafing much to their desire, the beautiful scenery and cool breezes proving most refreshing. After the aforesaid hill climb, which caused the loss of breath, but the gaining of an increased appetite, a splendid chicken dinner, "like mother used to cook," was served on the boat as we began the return trip. We were favored with river boat music and stories from our Russian friend, Boris Trifonoff, who for a moment had forgotten a turtle he had put into captivity. The musicians were asked to sing the favorite song, "Come Back to Erin." At the close of the dinner the trustees made a report regarding a minor change necessary in the rules of the Society, to meet the postal regulations in regard to the publication of the Journal. This report was unanimously approved. A committee was appointed at this time to draw up a resolution on the Greaves-Walker proposition.



1. Incline of No. 2. Plant Burton-Townsend Co. 2 A Geological Discussion of the Deposit. 3 Kiln Yard No. 1. Burton-Townsend Plant. 4 Bird's-Eye View of Burton-Townsend's No. 2. Paving Brick Plant.

Inspection Tour of Glass Bottle Manufactory.

On reaching the hotel, the crowd remained for a few minutes before going to the Kearns-Gorsuch Glass Co's. plant, a block and a half distant. Here we witnessed the manufacture of various size and shape bottles by mechanical process. The machines which received the molten glass blew, shaped and finished the product in about the twinkling of an eye, and it only remained for a boy to set the bottles onto an iron conveying shelf which carried them in groups to a point near the annealing furnaces, where they were picked up with a long handled gripper and placed in same. It was a most fascinating observation and an experience that will live in our memories for many days to come.

Trip Through Two Large Paving Brick Plants.

Thursday morning was given over to a trip through the two plants of the Burton-Townsend Co., manufacturers of high grade paving brick and block. No 1 plant is the outgrowth of the first paving brick plant in Ohio, however, were we to see the old plant today it would have to be in the shape of a phantom picture, for the present location is 75 feet directly under the spot where the old plant was located. Even so, the new plant is high up on the hill and is getting its raw material from a bank standing high above the city proper. A long incline with quite a distance of hauling being required to get same to the grinding department. The immensity of the shale bank is best portrayed in the statement that there is 20 feet of molding sand on top overlaying 40 feet of shale, superimposing a 4 foot bed of coal, a six to eight foot strata of fire clay, six feet of silica and 20 feet fire clay. When this hill is reduced to the city level the value of the real estate will be greater than the value of the company.

The shale is blasted and shoveled into bottom dump cars which are pulled by winding drum and cable up a 300 foot incline. Five Fate gasoline locomotives are used on the two plants in hauling cars to inclines. These have proven most satisfactory and a great saving in time and labor. The shale is dropped into a steel hopper immediately over a rotary type crusher which is under control of a powerful friction clutch, which acts as a feeder of the crushed shale to the heavy duty American dry pans, (capacity 500 tons per 10 hours).

From the pans the ground material drops into Gravity chutes to a point 23 feet below the pans, where vertical elevators carry it to piano wire screens of Bonnot make. The screened clay is conveyed into a third elevator, which takes it onto a 24 inch belt conveyor running lengthwise and over the screened clay, storage bin to a fourth elevator. The storage is so arranged that the screened clay can be conveyed over to and through a tripper to the pug mill storage or can be dropped from the tripper to the storage below, then through the conveyor under the storage bin to the No. 4 elevator and into the pug mill. By this arrangement, the material does not have to be handled from the time the shale is put into open dump cars, until taken from the off-bearing belt at the cutter. The plant's capacity is 400 tons of block or building brick per day. The pug mill is made by the International Clay Machinery Co., while the automatic cutter is of the E. M. Freese & Co. make. The ware is dried in an L. E. Rodgers Engineering Co's 24 tunnel drier and burned in 15 kilns, four round down draft, 32 feet and 11 rectangular.

Mr. L. K. Brown, vice-president, who is a member of the American Society of Mechanical Engineers, designed the plant and superintended its construction. The lay-out of the plant is ideal and its shipping facilities are all that could be required. The plant is located on the belt line, so that the company can draw for empty cars upon five railroads running into Zanesville.

A half mile walk from the No. 1 plant is located No. 2. This plant is similar in operation to plant No. 1, except that the raw materials are secured within shorter distance from a bank standing high above the plant and does not require a long incline to grinding department.

The ceramists stopped at the shale bank to hear a short discourse by Assistant State Geologist W. Stout, who entertainingly told them of the geological nature of the deposit and the great value of the molding sand found there.

Thirty-six different grades of sand are made from these deposits in four separate and distinct molding sand mills, owned and operated by the Company. These sands are used for a variety of purposes from use in foundries to munition plants, shipments are being made from coast to coast, but the especially heavy demand is from the Government munition plants where submarine chasers and Liberty motors are being made. The quality of the sand is unequaled anywhere in the United States for machinery castings. This business was founded by L. K. Brown, twenty odd years ago, when he designed and still has in operation, the first molding sand mill in America. All recognize Mr. Brown as the pioneer in bringing molding sand up to a scientific basis. He is now working on a mill construction and has it about completed for producing sands similar to the imported French materials to be used particularly in the manufacture of rifles, hand grenades and other articles where high grade castings are required.

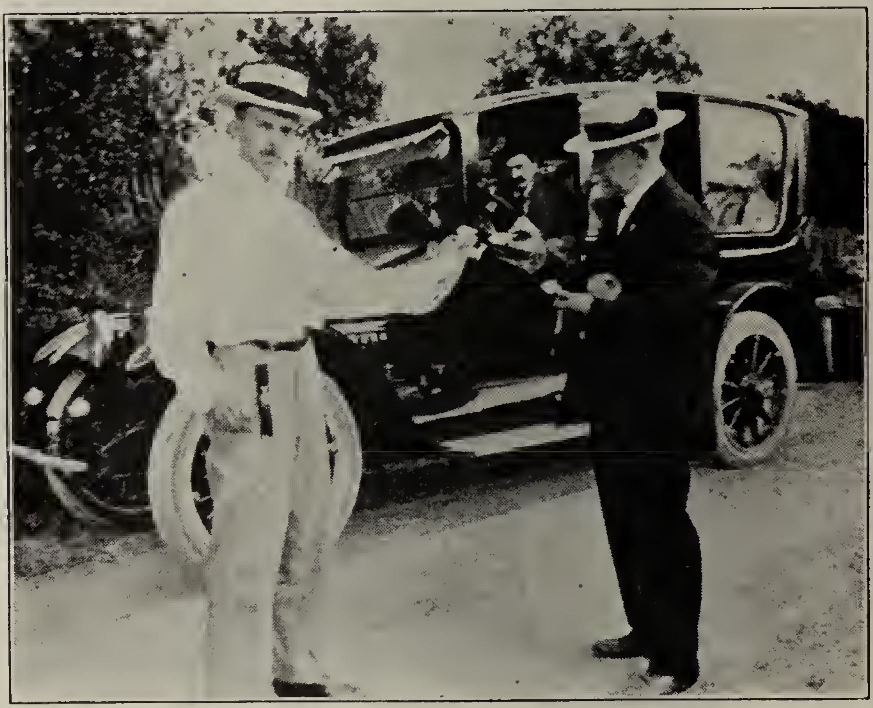
The Burton-Townsend Co. has 3,000 acres of coal lying immediately south of the city, which supplies the various plants. This is aside from the coal found in the plant property. The mines are all electrically equipped and the most up-to-date methods in mining are employed.

Mr. Burton, president of the company, secured the contract for furnishing paving block for the 16 mile roadway being built on the old National Pike, Zanesville to New Concord. Besides this present work the Townsend brick are being used in quite a number of Government warehouses and supply stations.

One of the pictures shown herewith is of A. L. See, superintendent of the manufacturing end, who has worked on this cite for 35 years. He gave the ceramists an interesting talk on the old and new methods, referring back to the days when the plant was 75 feet higher in the air, and consisting then mostly of a horse tempering wheel, an old fashioned brick machine and a few clamp kilns. Surface clay was used entirely those days.

A Trip to Site of America's First Munition Plants.

In the afternoon the ceramists were taken on a delightful automobile trip over the old National road, traveled more than a hundred years ago by stage coach and the ox teams on their way to points between Philadelphia and St. Louis. Many of the old land marks were pointed out, such as old stone bridges, mile posts and road houses. A short stop was made in front of the well preserved old road house, five miles out of Zanesville, built in 1830. It is said the traveler in those days could secure a supper, bed, breakfast and a pint of whiskey all for 25 cents. The building material used in the road house and many of the bridges was Maryland standstone, carried there in the most tedious fashion, 100 years ago. The masons built many of the bridges, for today you can see carved on same the worn square and compass. On the way we passed an old kiln formerly belonging to one of the many Blue Bird Potteries, which gave to Muskingum County its name as a pottery center. The points were incidental however, for our chief interest was in the flint ridge, fortifications of the old mound builders and finally the Buckeye Lake Resort.



Beau Brummel Montgomery Exhibits a Fine Arrow Head.

When we arrived at Flint Ridge, Licking Co., Ohio, we abandoned the autos for a while and wandered down over the hills where actually thousands of old pits remain now covered by moss and earth, but with plenty of evidence on hand, to show that here, hundreds of years ago, Indians were wont to come and collect their pieces of flint and chip same into arrow heads, knives, scrappers, hoes, skinners, darts, tomahawks, etc., implements of war in those days, so that here we found America's first munition plants.

This formation belongs to the Ferriferous or Vanport limestone, and has an area of about five miles with a thickness of from two to ten feet of flint, 97% silica. A number of these pits will be opened by the State Archaeologists for study and investigation, with the object of finding the method of quarrying by the old mound builders and Indians. The material is most valuable for the manufacture of silica brick, abrasives, etc. Mr. Stout stated that markings found had proven that man had inhabited this sphere over 300,000 years ago. We searched the old scattered piles of flint chips in and about the pits, some being fortunate in finding imperfect specimens of arrow heads.

From Flint Ridge, we journeyed to Newark and visited the golf links, where we walked over the old mound builders peculiar fortifications, which were so large in area that they easily enclosed the golf links proper. The mounds for protection at the entry ways were a source of much comment and discussion. From here we motored to the Buckeye Lake Resort, where a splendid supper was served. At the end of the meal the committee appointed, presented the following resolution, which was unanimously adopted:

A Corner in the Casting Department of the Crooksville Pottery.

Resolution Passed by The American Ceramic Society, Assembled in Summer Meeting at Zanesville, Ohio.

WHEREAS, Mr. A. F. Greaves-Walker, Chief of Industrial Furnace Section, Conservation Division, U. S. Fuel Administration, has requested the American Ceramic Society to secure volunteers to act under District Chiefs as Engineer Inspectors, to be known as Fuel Administration Engineers, Industrial Furnace Section,

AND WHEREAS, It is the sense of the American Ceramic Society in session at Zanesville, Ohio, June 25-28, 1918, that the Society should assist in every way possible in securing these volunteers,

THEREFORE, BE IT RESOLVED, That the Secretary be requested to write a letter to each available member, explaining the situation and urging him to volunteer for his service, addressing Mr. Greaves-Walker and sending a copy of the letter to the Secretary.

BE IT FURTHER RESOLVED, That the Secretary be instructed to write to Mr. Greaves-Walker, advising him of the action taken, assuring him of the hearty co-operation of the Society, and volunteering to supply each District Chief with a list of men available for service in his district. The letter to Mr. Greaves-Walker should contain a statement recommending that he appoint as District Chiefs, men occupying technical bureau or university positions, who are disinterested in the industries and whose training and experience fit them for these positions.

Signed by Committee:

ELLIS LOVEJOY,
F. K. PENCE,
E. T. MONTGOMERY,
F. H. RIDDLE,
J. B. SHAW.

The remainder of the evening was devoted to amusements, such as dancing, swimming and roller skating and the delightful ride back to Zanesville.

Trip Through Large Stoneware Plant.

Friday morning we boarded a special trolley car for the Ransbottom Bros. stoneware plant. We were welcomed by one of the Ransbottom brothers, who escorted us over the immense plant, which has a capacity of over ten cars of stoneware each day. The cleanliness and systematic methods in this factory appealed strongly to every visitor. Every device possible to save time and labor has been installed here, so that the excursion through the various departments held the visitor's interest from start to finish. The plant is credited with the first installation of a carrying device of much value in the delivery of the clay to the jiggerman. It works on the order of a hay fork system, the bucket of clay being filled in the basement in the pugging department, fastened to the cable, which draws it up to the overhead track and glides it along the side of the immense building, to the point desired, where the bucket is automatically tripped and the clay dumped into the storage bins or pockets. The spring, rubber tired trucks, the Weeks machine for making jars up to 50 gallons, and kiln house, were all interesting and novel. The Weeks machine consisted of a vertical arm and revolving (at an angle) wooden roll tapered at either end, the size depending on the size of the jar made. Just sufficient clay is thrown into the mold after the inside wall is covered by a paper wrapper to prevent clay from sticking, the mold then revolved and the arm with slanting roll pulled down and in its whirling draws the clay up the side of the mold and forms the jar to the desired thickness and height. This work is all accomplished in a few seconds time.

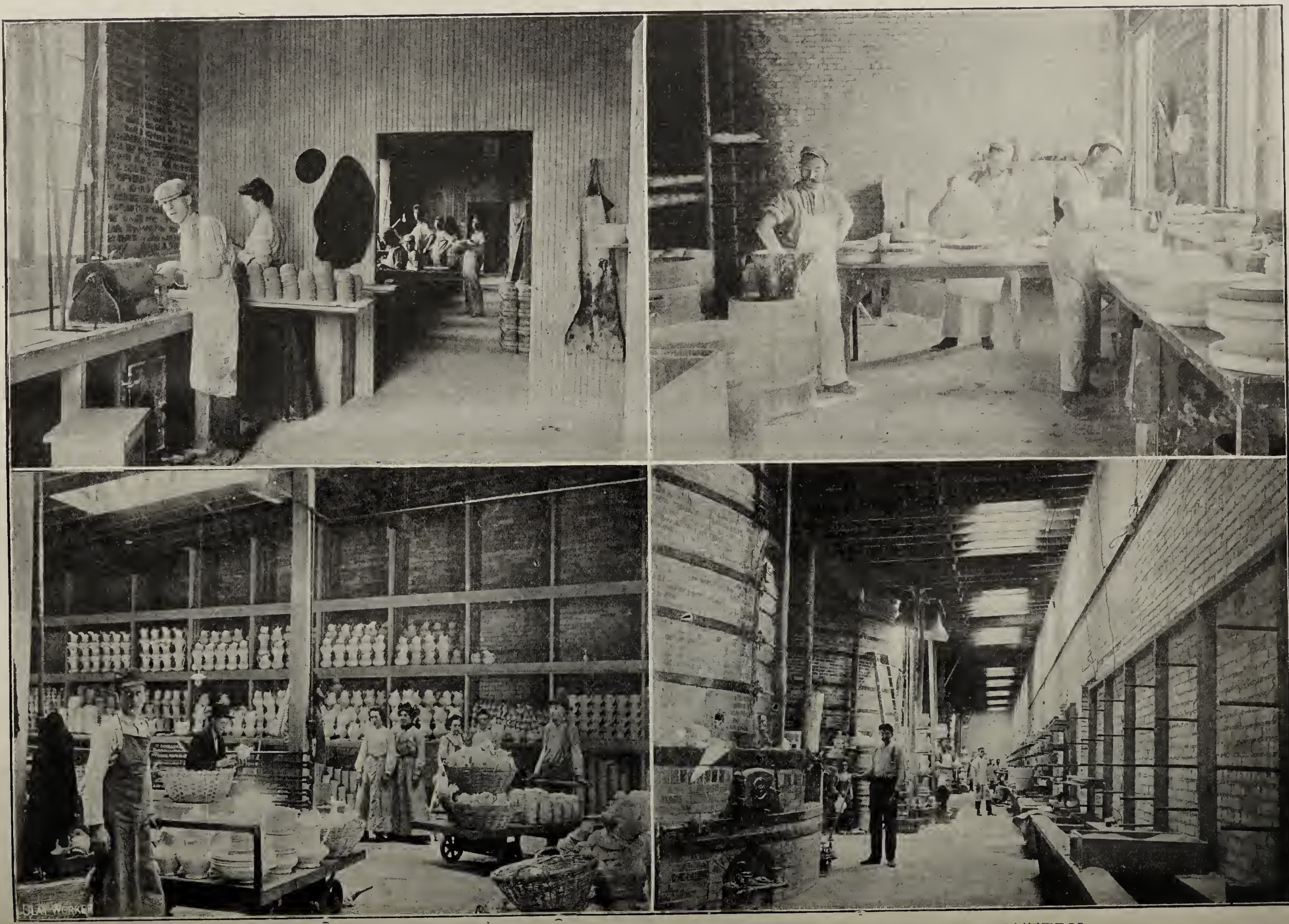
The department where handles were being put on the jugs held a surprise for many of the visitors in the swiftness and accuracy with which the potter did his work.

The 13 kilns are all housed in one large shed of steel construction. It was as clean as a butcher shop. In the store room was but little ware, because of the demand for same by the trade and the Government. The Government uses the 50 gallon jars for acid storage, etc. These jars are also used for meat and pickling purposes. One hundred of them are set in a kiln and every one is taken out perfect. The Government tested these with a mixture of sulphuric and nitric acid for six months and found no deterioration. The acid did not penetrate a particle of the wall. Albany and Michigan slip are used exclusively.

Each ceramist was furnished with a smoke and extended a standing invitation before the crowd made its departure for the Crooksville China Co's. plant at Crooksville.

An Excursion Through a Fine China Plant.

At the office of the plant we were met by Messrs. J. L. Bennett and Guy Crooks, secretary, who escorted us through



VIEWS OF SEVERAL DEPARTMENTS OF CROOKSVILLE CHINA CO.'S POTTERY.

(1) A Corner of the Casting Room. (2) View of Mold Room. (3) Sorting for Shipment in Stock Room. 4) View of Large Kilns.

the factory. Here are made lines of high grade dinner and toilet sets and specialty ware. Formerly they manufactured stoneware, but as the Zanesville district is given over almost entirely to this industry, they saw an opening and good market for whiteware, and became one of the leaders in the field. The factory is housed in a large one and two story building, 131 feet wide and 364 feet long. The factory is well arranged, so that the clays and green ware advance in their preparation for the market in well regulated paths. Every section of the building is set aside for one specific purpose and the workmen are so skilled that the work is carried on from year to year with scarcely a change in the systematic order of the manufacture. The raw materials are dumped direct from the cars into their individual bins, at one end of the factory. The clays are mixed as needed in proper proportions and ground and screened and delivered to the iron blungers and agitators in the slip rooms, which is well equipped with all necessary clay washing and mixing machinery, for thorough pugging and preparation for the pressing rooms. From the pug mill, the pugged clay is elevated to the clay shops on the second floor, while the clay slips are taken to the pressing rooms ready for use in the plaster molds. The clay shops are equipped with the usual iron jollies and turning lathes which stand on benches extending the whole length of the building. The ceramists were much interested in watching the workmen here throwing ware, turning out hundreds of pieces daily. The pressing and drying departments cover the most space in the factory, the pressing benches lining the walls under the windows, while the drying racks cover all the floor except for a strip around the benches for the men to conveniently press and walk back and forth carrying pallets of ware to their places in the racks. All the ware is dried by steam, thousands of feet of piping being used.

A new feature recently installed on this plant is a revolving drying rack, which saves the labor of several boys. This developed, no doubt from necessity created by the war for labor is scarce here as everywhere else. This revolving drying rack consists of 24 arms on a central vertical pivot, each holding below it 12 shelves on which molds are placed. These arms with their shelves, work on the same order as a sliding door and can be pulled out from the pivot to one side on either of two tracks; one handy to the molder, who after shaping ware in the mold, places same without moving from his seat in its place on one of the shelves. While the twelve shelves are being filled, a rack is being emptied by a girl who has pulled the closest arm with the shelves of dried ware in the molds onto the second overhead track. The girl takes the ware from the mold, places mold on shelf where it is reached easily, and again filled by the molder's assistant, who slaps a wad of clay into the mold and the second workman turns it to the proper size before placing it on one of the shelves of the other rack. The girl has time to empty the molds and smooth the dried ware ready for the seggars. This work is done with such clock-like system that there is never a hitch in the operation. This eliminates the use of bearer boys and unnecessary handling. This revolving rack holds 110 dozen molds, 200 dozen being made daily.

The decorating room is furnished with all modern conveniences for fine decorating work. The glaze room is equipped with the best of machinery, including glaze pans of drag stone mill type. Testing apparatus and everything needed for laboratory work is installed.

The ware is burned in large bisque and small decorating kilns. The ware manufactured is for the most part semi-porcelain, the plain white, decorated and fancy art china finding a ready market.

After some time spent in the display room, where beautiful ware was on exhibition and several orders taken for complete sets, the proprietors took the ceramists by auto to a restaurant, where a fine chicken dinner was presented with the compliments of Crooksville China Co.

After dinner a hurried visit was made through the A. E. Hull Pottery, just previous to catching the train for New Lexington, for a two hour's inspection tour of the

World's Greatest Manufactory of Roofing Tile.

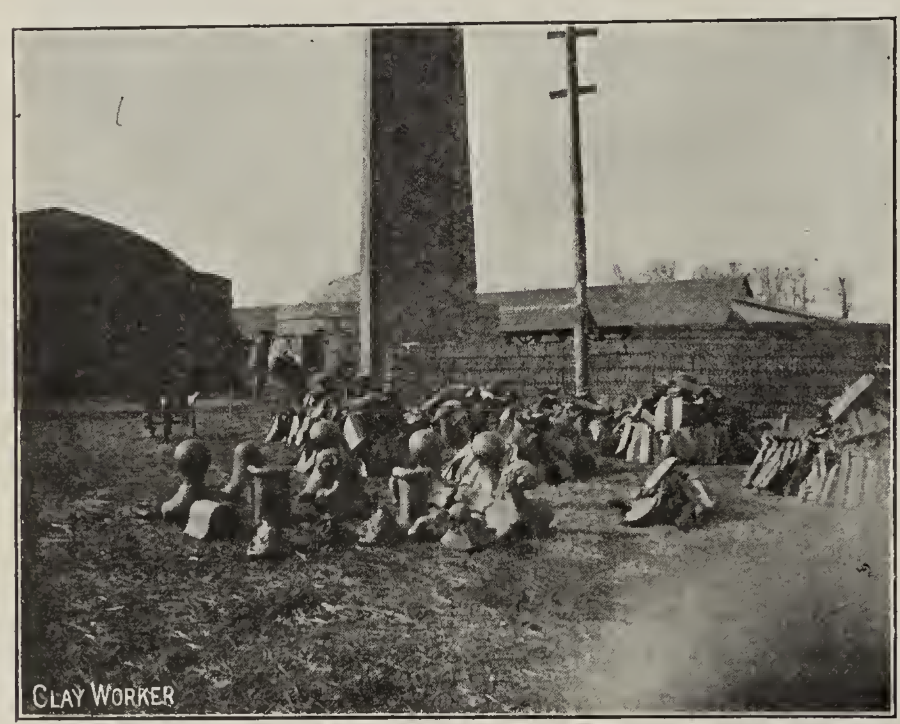
The Ludowici-Celadon plant, famous the country over was a revelation to all the visitors, who marveled at the system, cleanliness, and unique methods used there. Of peculiar interest was the Powell Shale Planer, made by Arbuckle & Co. of Rushville, Ind., which was cutting into a fifty foot face of hard shale, clay, sandstone and nigger heads without a second's delay, the entire time the visitors were there. This, we are told, is its constant performance. The readers of The Clay-Worker are no doubt familiar with the operation of this superior machine, which has been described in detail several times in our reading columns. The three motions of the machine which carry same up to the face of the bank, brings the cutter device down the face and the motion which carries the machine along the tracks, results in the entire face of the 50 ft. height and 59 ft. length to be cut one-half inch deep every hour. The material drops from the conveying belt of the machine into the six clay cars, while the machine is in motion, a Jeffery Electric transfer car regulating the cars and carrying them when filled into one of the three large tsorage sheds, where the cars are emptied through tracks running across the top of the immense building. These overhead tracks are 90 feet long, three stories high. The storage bins are equipped with under floor conveyor belts, which feed the material as needed into American Clay Machinery Co's. pans. An idea of the large capacity of this plant is secured in the knowledge that the power for grinding alone requires three gas engines of 150 h. p. each. The clay is screened on Newago screens.

Shale Planer and Fifty-foot Bank Lucowici-Celadon Plant.

There are three units to the plant proper, each equipped with American Clay Machinery pugmills and machines. Roger presses are used. One unit has six presses, girls removing and placing pressed ware onto drier cars. The presses are fed by men, who slap pieces of clay the desired length into the mold. The pieces of clay are secured from off bearing belts running entire length of the presses from cutter.

Each press has five molds fastened on one metal frame which revolves. The top mold holds the clay while the bottom form presses it into shape. The molds are oiled to prevent sticking. Twelve tile are made each minute. The bottoms are replaced every five hours, the wearing down of same would cause the tile to be too thick if allowed to remain. The other units make various sizes and styles of tile, the clay coming out of the machine in columns, cut, pressed and punched automatically. As high as 20 thousand quarry tile are made daily. The tile are dried in 36 tunnel driers and burned in 33 kilns, 3 rectangular, one Richardson continuous kiln and the remainder round down draft.

Interior View of Kiln set with Roofing Tile.

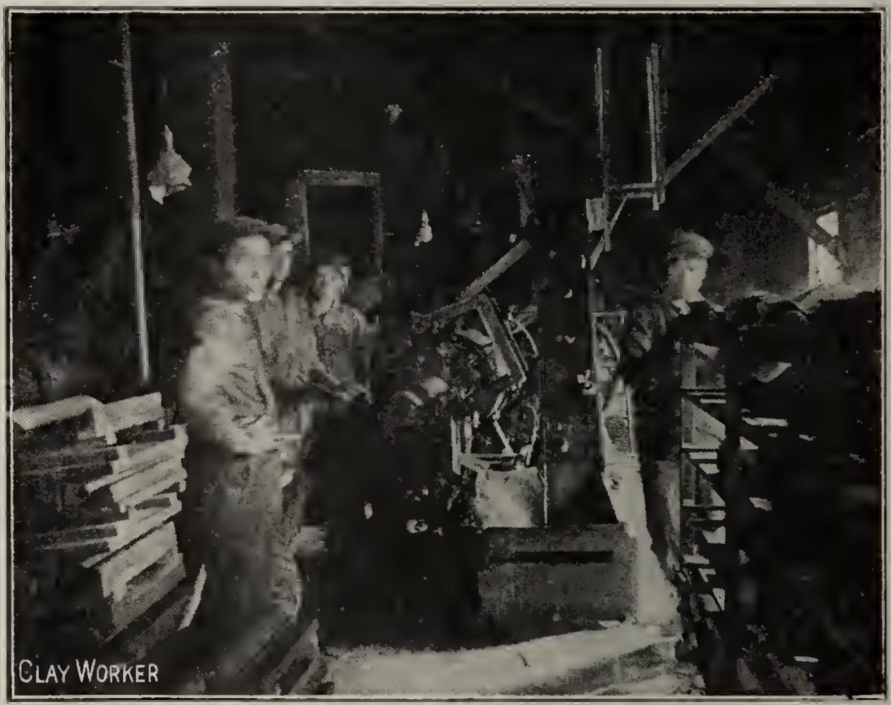


Finials, Crests and Tile on Ludowici-Celadon Stock Yard.

The glaze preparation and dipping rooms were attractive to the ceramists, as were likewise the immense piles of beautiful glazed and unglazed tile on the stock yard. The plant is unusually well lighted and ventilated. Cleanliness is a watchword, each department has its individual janitor. As the party left the plant we took a last lingering look at the red tile which covers the buildings, the roofs over the transfer tracks and even the stock sheds. Mr. T. J. Chadwick, assistant superintendent and Samuel Frew, general superintendent, were our escorts. A splendid trolley system, owned by the company, conveyed the party from the railroad station to the factory and afterward to the plant of the Ohio State Brick & Stone Co., within a stone's throw of the depot.

Here we were escorted by Mr. C. B. Young, vice-president, who explained entertainingly the many requirements in the manufacture of the Halo fire brick on this plant and later took a small delegation through their clay mines at Moxahala, reached after the autos had climbed many a hill and wound down around to the grinding department there. They have an immense deposit of fire clay, which they have just opened up and begun to mine. Several large entries have already been prepared.

Press Used for Making Largest Size Tile.



The Cutting Table and Return Belt.

By this time the majority of the ceramists had gone their several ways and it was but a small group that said adieus late Friday afternoon in New Lexington.

List of Delegates at Summer Meeting of American Ceramic Society at Zanesville, Ohio.

R. Guy Cowan	Cleveland, O.
C. H. Stone, Jr	Cleveland, O.
E. P. Poste	Elyria, O.
Carl H. Zwerman	Kalamazoo, Mich.
C. Nick Muessig	E. Liverpool, O.

J. E. Randall	Indianapolis, Ind.
R. K. Hursh	Urbana, Ill.
C. Knox Harding	Chicago, Ill.
W. H. Shearman	New York
W. S. Berger	Covington, Ky.
M. C. Booze	Columbus, O.
C. S. Linder	Terranum, Pa.
H. G. Schurecht	Columbus, O.
J. W. Sanders	Moundsville, W. Va.
H. B. Henderson	Columbus, O.
C. W. Berry	St. Louis, Mo.
C. L. Casey	Cambridge, O.
Wm. R. Malkin	E. Liverpool, O.
Wm. B. Louthan	E. Liverpool, O.
Louis Pohle	Trenton, N. J.
Everett Townsend	Trenton, N. J.
A. Misumi	Tokyo, Japan
S. Nakahara	Tokyo, Japan
Theodore Zwerman	Newark, O.
F. L. Steinhoff	Chicago, Ill.
Davis Brown	Bucyrus, O.
Tosaku Yoshioka	Pittsburgh, Pa.
Chas. O. Grafton	Muncie, Ind.
Elza F. Heistand	Muncie, Ind.
Milton F. Beecher	Worcester, Mass.
Henry E. Maddock	Trenton, N. Y.
C. Merts Franzheim	Wheeling, W. Va.
C. A. Dean	Worcester, Mass.
Phaon H. Swalm	Trenton, N. J.
E. T. Montgomery	Detroit, Mich.
F. H. Riddle	Pittsburgh, Pa.
Chas. F. Quaintance	Golden, Colo.
T. A. Klinefelter	Pittsburgh, Pa.
Adolph Hottinger	Chicago, Ill.
H. N. Haberstroh	Chicago, Ill.
David B. Gibson	Chicago, Ill.
C. H. Tipton	Barnesville, O.
Ellis Lovejoy	Columbus, O.
Herbert Brewster	Chicago, Ill.
Harry W. Smith	Cleveland, O.
John W. Hasburg	Chicago, Ill.
Geo. W. Shoemaker	Perrysville, O.
M. B. Cheney	Briggsdale, O.
Fred Sauereisen	Derry, Pa.
H. M. Pulsifer	Chicago, Ill.
J. F. Krehbiel	Chicago Heights, Ill.
F. J. Arbenz	Chillicothe, O.
Thos. H. Sant	E. Liverpool, O.
G. R. Thomas	E. Liverpool, O.
Robert T. Hall	E. Liverpool, O.
C. J. Kirk	New Castle, Pa.
Philip Dressler	New Castle, Pa.
W. S. Kupfer	New York
W. H. Phillips	E. Liverpool, O.
C. D. Fraunfelter	Zanesville, O.
F. K. Pence	Zanesville, O.
J. D. Whitmer	Zanesville, O.
Frederick Rhead	Zanesville, O.
F. B. Ortman	Chicago, Ill.
Herman Worsham	Buffalo, N. Y.
Geo. Brain	New Castle, Pa.
J. B. Shaw	Alfred, N. Y.
D. D. Irwin	E. Liverpool, O.
R. D. Landrum	Cleveland, O.
William McCoy	Zanesville, O.
C. F. Lumb	Zanesville, O.
Fred Brand	Roseville, O.
Earl R. Crooks	Crooksville, O.
J. M. Christie	Cleveland, O.
Boris Trifonoff	Zanesville, O.
Geo. A. Brush	Zanesville, O.
S. M. Seright	Zanesville, O.
A. L. Cusick	Zanesville, O.
Cecil Jones	Zanesvile, O.
Ellsworth P. Ogden	Columbus, O.
G. J. Young	Zanesville, O.
Adam Reed	Zanesville, O.
Carl Bergmans	Zanesville, O.
H. A. Hall	Nelsonville, O.
R. W. Greene	Mayfield, Ky.
C. W. Chatham	Pittsburgh, Pa.
P. Edwin Thomas	Cincinnati, O.
Charles L. Walduck	Worcester, Mass.
Wilber Stout	Columbus, O.
L. K. Brown	Zanesville, O.
Homer T. Darlington	Natrona, Pa.
C. E. Fulton	Pittsburgh, Pa.

GOVERNMENT ANNOUNCES PREFERENTIAL TREATMENT FOR HOLLOW TILE MANUFACTURERS.

The War Industries Board, in Washington, makes the following announcement:

A committee representing the principal manufacturers in the United States of hollow tile were accorded a hearing before the priorities commissioner and other representatives of the War Industries Board. The hearing developed the fact that considerable quantities of hollow tile are required in connection with Government construction, a limited amount in expansion by war industries and in the building of silos, etc.

The conclusion was reached that the industry should be accorded preferential treatment to the extent necessary to produce the tile required for the uses mentioned and no more, conditioned upon the producers pledging themselves to sell their product only if devoted to essential uses as that term shall be defined by the Priorities Board.

BOUGHT A FRENCH HOTEL TO BILLET U. S. TROOPS.

The way things are done by the Y. M. C. A. is shown in the following news item:

In one of the big seaport towns of France recently, a division of American soldiers debarked. Every available house in town had its full complement of soldiers billeted, and there was no place where the tired troops just off the steamship could be housed. The nearest city was 50 miles away. The only chance was to lodge them in an immense hotel. This was crowded with guests. The Y. M. C. A. secretary, upon whom developed the necessity of finding quarters for the soldiers, had to think quickly.

He went to the wartime governor and told him that he would like to lease the hotel. For some reason the official declared this to be impracticable.

"Then we'll buy the hotel," said the "Y" man.

"How about the guests?" asked the official.

The "Y" secretary made arrangements with each of the guests, all of whom patriotically waived their privileges and went by rail to the distant town where accommodations had been arranged for them by telegraph by the "Y" man.

The Y. M. C. A. will continue to use the hotel during the war for the accommodation of the soldiers.

It is better to be a success in a modest business than a failure in a big undertaking.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXVII.

Up-draft Kilns.

AN UP-DRAFT kiln, illustrated in Fig. 46 (in previous chapter), is an open-top kiln, virtually a scove or clamp kiln, inclosed in heavy, permanent walls.

The advantages over a clamp kiln are:

(1) Saving in labor required to scove and daub a clamp kiln.

(2) Less radiation loss.

(3) Permanent furnaces and in consequence a better type.

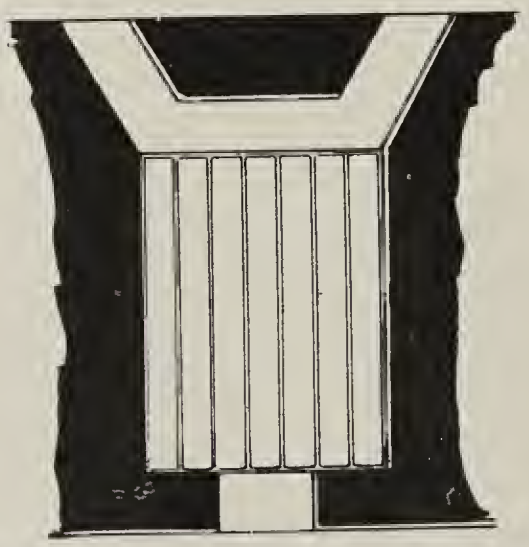


Figure 47.

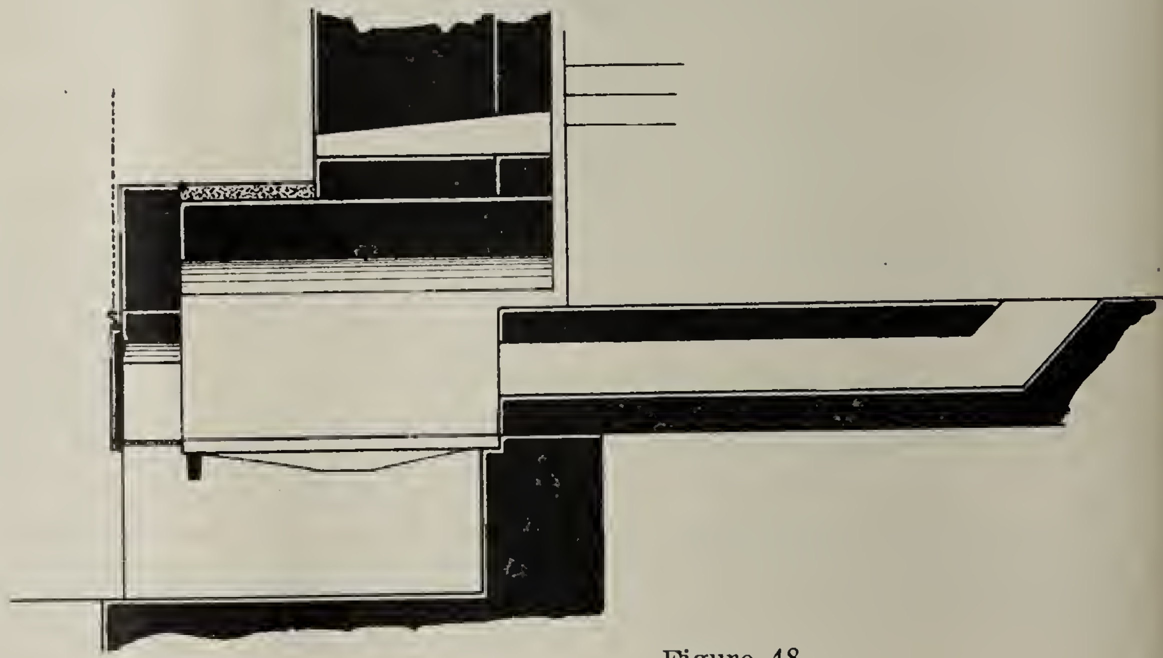


Figure 48.

(4) The platting bricks may be piled on top of the permanent walls, whereas in scoved kilns they must be tossed up and down each burn.

(5) The heavy walls hold the set bricks in place, eliminating the racking back to batter the heads, and there is no danger of the mass of brick spreading to a dangerous degree, drawing outward, and sections falling, thus exposing the burning bricks, as occasionally happens to a scoved kiln.

There is, of course, the cost of installation, but this is quickly offset by the saving in labor.

The necessity of removing the brick through the doorways in the ends of the kilns is a disadvantage in some situations, in that it increases the average distance the burned bricks must be moved, and likewise increases the average distance the unburned bricks must be moved in getting them from the drying hack to the setting face.

The most general arrangement is to place the kiln longitudinally between the dryer and the loading tracks. The average distance the ware must be moved within the kiln walls is half the length of the kiln, whereas the average distance in the scove kiln is half the width.

Where the burned product is loaded into wagons which can be backed into the kiln to the working face, the increased distance is of no consequence. Where the loading is into cars or boats, portable gravity carriers can be used in moving the burned product, which practically eliminates the item of distance cost, and the advantage of the scoved kiln is then almost negligible.

The setting in an up-draft kiln is the same as a scoved kiln, except that the outside is plumb and in close touch with the kiln wall. Frequently the outside courses are set 2 on 1, to give greater flue space near the walls. The setting varies from 3 on 1 (three bricks on edge in the length of one brick) to 11 on 5, depending on the length and thickness of the bricks, the usual setting being either 3 on 1 or 8 on 3. Three on one is close setting, and more open setting ranges through

8 on 3, 5 on 2, 7 on 3, 11 on 5 and 2 on 1. The general setting is seldom more open than 8 on 3, and the wider settings given are only used in parts of the kiln where the burning has shown that draft is needed to get uniform results. The advantage of 3 on 1 or 8 on 3 setting is that the work can be carried up in three brick benches over which the setters can reach nicely.

Sizes of common bricks vary widely, and the setting varies accordingly. The standard for common bricks adopted by the N. B. M. A. is 8¼x4x2¼. The New England and Hudson river bricks range between 7¾x3¾x2 and 8x3⅞x2⅛. The Western and Southern product runs as large as 8½x4¼x2½.

Furnaces and Burning.

Scoved kilns were originaly burned with wood and the furnaces were merely openings through the wall, connecting with the arch. As wood became scarce and the use of coal was necessary, a short, flat grate was introduced, and to get the heat to the center an occasional stick of wood was pushed into the arch as near the center as possible, or lumps of coal were thrown in over the grate fires to the center. Thus part of the combustion took place on the grate bars and part on the solid kiln floor.

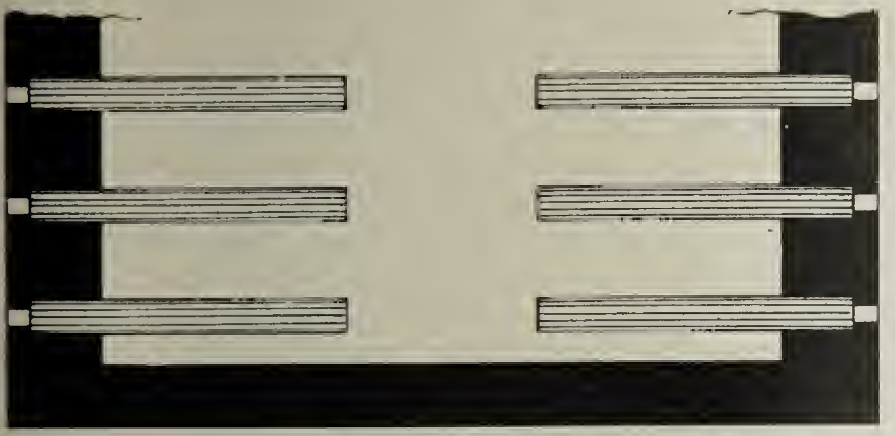


Figure 49.

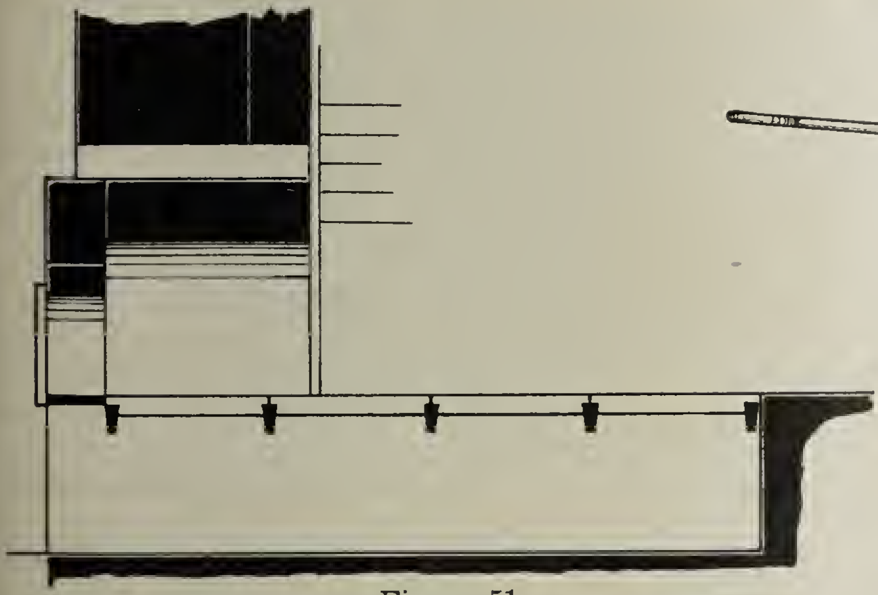


Figure 51.

The up-draft kilns with heavy walls give opportunity for permanent furnaces of a better type. The most common is a simple flat bar box furnace with a door, ash pit and throat connecting with the kiln arch, the grate bar being level with the kiln floor, and the coal storage and firing pit depressed 18 inches to 24 inches to the level of the ash-pit floor.

The furnaces are 12 inches to 16 inches wide and 36 inches to 48 inches long, and are spaced to correspond with the arches of the kiln—36 inches to 42 inches. There is a difference of opinion in regard to the furnace throats. Some hold that the throat should be greatly reduced, as small as 6x6 inches, to introduce the combustion gases as a jet, which serves to project them to the center of the kilns. We have, however, seen excellent results with furnace throats the full size of the furnace and practically the size of the arch. We are of the opinion that the experience and intelligence of the burner has more to do with the results than an open or restricted throat.

We frequently find a single furnace on each side of the kiln, arranged for two arches, as shown in Fig 47, and the flat bar coking table furnace, previously illustrated, has been extensively used in up-draft kilns. Sometimes three arches are connected with a single furnace in a similar manner.

Considerable skill in burning is required to get satisfactory results from up-draft kilns. It must be borne in mind that the mass of set bricks is the stack, and if any portion becomes unduly heated the draft will be to this point. Chimneys of over burned, frequently fused bricks, surrounded by masses of under burned bricks, are of frequent occurrence and any burner who can get uniform results throughout the kiln should be kept on the job. If the kiln is wide and the draft weak, the heads will become unduly heated and the center cannot be brought up to a finishing heat. The restricted throat, above mentioned, is used to overcome this difficulty. Where wood is used, cross-firing is common practice. When the kiln is ready to fire, the fires are started on one side only, for a short period. This serves to heat up the brick along this side, and after this is accomplished the furnaces are closed by sheet iron plates and daubed. The firing then is from the other side for a period of four to six hours. The strongest draft is on the side first fired, and the tendency is to draw the gases through the arch to this side, thus heating the arch the full width of the kiln, but in spite of this the side next to the fire rapidly gains and becomes the hottest. After about six hours the fires are reversed. Two to four days of such cross-firing gets off the watersmoke and heats up the kiln from side to side, with the heads slightly in advance of the center. Then both sides are fired, some wood being pushed to the center to maintain the desired condition until the heat works to the top and the kiln is finished. In some instances the cross-firing is continued to the end of the burn.

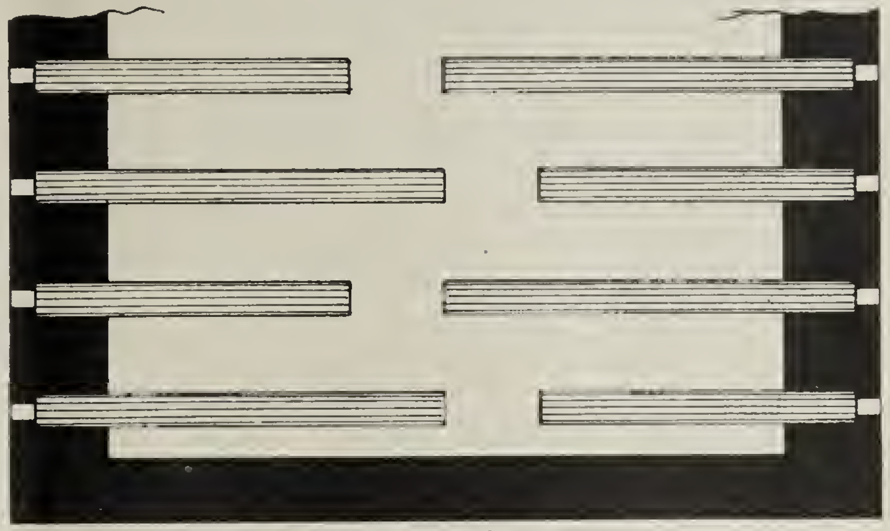


Figure 50.

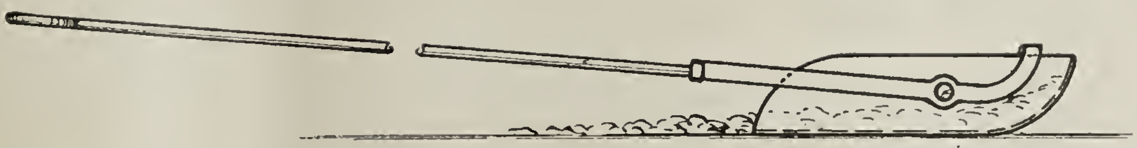


Figure 53.

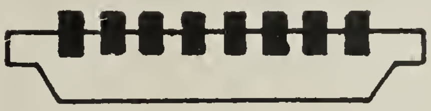


Figure 52.

Cross-firing is not used in coal burning, and in some op-

(Continued on page 80.)

GOVERNMENT TAKES OVER A LARGE PART OF THE BUILDING BRICK OUTPUT OF COUNTRY FOR WAR WORK.

Priority and Production Conference of Brick Manufacturers and National Council of Defense in Washington—Drastic Restriction of Building Brick Products to Essential Industries—Fuel Curtailment Stands

WHAT AMOUNTS TO A PRACTICAL commandeering for war work of the country's entire production of brick was effected at the conference in Washington on July 5 and 6, between the brick manufacturers and the National Council of Defense. The meeting was held under the joint auspices of the Priorities Committee and the Building Materials section of the War Industries Board. Judge Edwin B. Parker, of the Priorities Committee, presided. The conference was in immediate charge of Richard L. Humphrey, chief of the Production Division.

There were present forty-nine of the leading brick manufacturers, representing practically all of the eighteen zones into which the country has been divided.

The meeting was harmonious throughout, but it had not progressed far until it became evident that there was a feeling that the industry was carrying about all the restriction it could stand and continue to exist. In the general discussion, which at no time lacked emphasis of the present situation of the trade and was most convincing as to the state of mind of those engaged in it, the fact was brought out again and again that the brick industry is ready to do its full part in helping to win the war. There was no uncertain note on this subject.

Judge Parker called upon each member of the war service committee—one of whom is selected from each of the eighteen zones—for an exhaustive report of the status of the brick-making industry in his district, facilities, stock on hand, kinds of brick produced, present disposition of output, kinds of fuel used, how much of full allotment already used, how labor figures in the question, etc. From the facts thus gathered it was evident that, if allowed to proceed without further interference with fuel supply and given fairly adequate transportation facilities, the brick industry will be able to hold together for the period of the war, and be in position to take care of big business following the close of hostilities. A notable phase of the situation as developed at the hearings was that, in general, the middle western and Pacific coast manufacturers are working about 75 per cent. of full capacity, while the eastern concerns, especially those in New England, New York and New Jersey, are operating as low as 33 per cent. of normal, and with very limited stocks on hand.

"We are ready and willing," said R. C. Burton, of Burton, Townsend & Co., Zanesville, Ohio, "to mix any quantity of patriotism with our brick making which the War Industries Board thinks we should. You'll not find a slacker in the ranks of the brick makers. But there is one condition which must appeal not only to the war boards, but to every person who takes even a superficial view of the matter—and that is that if you put too heavy a burden on us we will not be able to stand up. All we ask is that we be allowed to live. Speaking for my own firm, I can say we are probably fixed better than many others, for we own our coal mines adjacent to our plants and depend upon no outside source for fuel."

"In my district," said William Schlake, of Chicago, "we have surmounted some of the difficulties by a sort of pooling arrangement of resources and orders between the brick manufacturers. This has helped to an extent. My company now has orders on its books which will use up its allotment of coal for the balance of the year. We must keep going. The brick industry in my district and everywhere else asks only for the chance to live. It must be very evident to you gentlemen who represent the National Council of Defense that if the fuel allowance is cut so low that we cannot operate, and transportation is denied us, we must simply throw up our hands. We are here to ask for fair treatment."

It developed early in the conference that it was the purpose of the government authorities to restrict the entire brick production of the country to war work and "indispensable" building operations, and that none was to go to any building project which was not directly or indirectly connected with the prosecution of the war.

This attitude of the government immediately brought about an animated discussion as to what was to be understood as "indispensable" enterprises, as well as what course must be pursued in the case of structures, whose erection has no connection with the carrying on of the war, which are partly completed. It was suggested that the matter of "indispensable" building enterprises might better be left in the hands of building inspectors of the various cities and towns, who could be looked to by the Government to differentiate between necessary and unnecessary building operations. The suggestion was not favorably received by the chairman, Judge Parker, who said that he would much prefer to depend upon the honesty and integrity of the brick manufacturers themselves and to leave the matter in their hands. Judge Parker's expression of confidence in the members of the industry was received with not a little applause.

Referring to non-essential building enterprises partly under way, Judge Parker stated that this is a phase of the subject which had been under consideration and discussion in connection with other building material industries, and that it is a matter which must largely be left to the good judgment, common sense and patriotic motives of the brick makers themselves. As a general proposition, however, he said that it would be his view that such buildings already over 50 per cent. completed should receive the materials to finish them; where under 50 per cent., except in rare instances, they would better wait until the war is over.

Not a little discussion was devoted to the subject of the brick manufacturing industry using fuel other than coal, and it developed that in some sections (notably in southern California) oil was being used entirely, being piped directly from the oil fields to the kilns; in some sections of the south wood could be used under certain conditions, provided labor is obtainable for cutting and hauling.

Judge Parker, in his address at the conclusion of the conference, said that the government is not inclined to take any measures which will result in even one brick less being made than should be made, but that we must all subordinate ourselves and our businesses to the one object of winning the war. Whatever serves toward that end, directly and indirectly, must be encouraged, and all energy, man-power, material and transportation now given to less-essential, non-war projects must be eliminated. He said he was satisfied that every man in the conference understood and appreciated the situation, and that it was unnecessary to go into the subject at length. He emphasized the point that he wanted every brick manufacturer to feel that he was trusted by the government to do his part. He stated that for war purposes, plants or buildings connected with our war operations, housing of war plant employes, etc., fuel and transportation would be furnished, but for all enterprises not directly connected with our war work all requests for priority of shipment must be made to the Priority Committee, who will grant it if it seems desirable and advisable so to do. Furthermore, he said, every brick manufacturer would be required to sign a pledge to be furnished by the Government, binding him to dispose of his output only to essential war industries. These pledges will be sent out by the Priorities Division, of the War Industries Board. When returned they will be placed on file, and every concern which signs the pledge will be compelled to live up to it. The following is the pledge which the Government requires:

Pledge Form.

The undersigned, through its authorized representatives, hereby pledges itself not to use nor, so far as lies within its power, permit the use of any products of its manufacture now in, or which may hereafter come into, its possession or control save (1) for essential uses as that term may be defined from time to time by the Priorities Division of the War Industries Board or (2) under permits in writing signed under authority of such Priorities Division and that it will make no sale or delivery of such products to any customer for resale before his filing with it a similar pledge in writing and that it will use its utmost endeavor to insure that its products be distributed solely for essential uses.

The War Service Committee of the common, face and paving brick industry, with the districts represented, is as follows:

District 1—New England States, north of Albany and east of Mechanicsville, N. Y. J. F. Reynolds, North Haven, Conn.

District 2—Eastern New York, east of Amsterdam and south of state line. W. K. Hammond, Dutchess Junction, N. Y.

District 3—Northern New Jersey (excluding Trenton). D. J. Fisher, Perth Amboy, N. J.

District 4—Philadelphia, Southern New Jersey, Trenton, Delaware and Eastern Pennsylvania (including Harrisburg). R. T. Hamilton, Philadelphia.

District 5—Maryland, Virginia, District of Columbia, North Carolina (east of Asheville). H. E. Stringer, Washington, D. C.

District 6—Tennessee, North Carolina (west of and including Asheville), South Carolina, Georgia, Florida and Alabama. W. E. Dunwoody, Macon, Ga.

District 7—Western New York. M. E. Gregory, Coming, N. Y.

District 8—Western Pennsylvania. W. E. Sankey, Pittsburg, Pa.

District 9—Ohio, West Virginia, Eastern Kentucky. F. C. Chapin, Cleveland, O.

District 10—Illinois, Indiana, Southern Wisconsin (including Madison). F. W. Butterworth, Danville, Ill.

District 11—Southern Peninsula of Michigan. George H. Clippert, Detroit, Mich.

District 12—Mississippi, Louisiana, Arkansas, Texas (except El Paso County). W. R. Bennett, San Antonio.

District 13—Washington and Oregon. No representative.

District 14—California, Nevada, Arizona, New Mexico and El Paso County, Texas. W. W. Dennis, San Francisco.

District 15—Colorado, Utah, Idaho, Montant. John P. Cahoon, Salt Lake City, Utah.

District 16—Missouri, Kansas, Iowa, Nebraska and Oklahoma. B. W. Ballou, Buffville, Kan.

District 17—North Dakota, South Dakota, Minnesota, Northern Peninsula of Michigan, Wisconsin (north of Madison). No representative.

District 18—Chicago. William Schlake.

In addition to the foregoing the following were present at the conference:

David W. Steel, representing Augustus Reeve, Camden, N. J.

Hubert Somers, representing Somers Brick Co., Atlantic City, N. J.

J. M. Purcell, representing Duffey Brick Co., Mechanicsville, N. Y.

R. A. Moore, representing Duffey Brick Co., Mechanicsville, N. Y.

R. A. Bailey, representing Mass. Brick Mfg. Co., Springfield, Mass.

W. N. Cary, representing Cary Brick Co., Mechanicsville, N. Y.

Jas. B. Oberly, Wilmington, Del.

C. M. Oberly, Wilmington, Del.

Howard H. Stafford, representing Georgia-Carolina Brick Co., Augusta, Ga.

Walter J. Hunter, representing Kingsport Brick Corporation, Kingsport, Tenn.

A. H. Bickerstaff, representing Bickerstaff Brick Co., G. O. Berry and Shepherd Bros. Brick Co., all of Columbus, Ga.

H. L. Carter, representing Westport Paving Brick Co., Baltimore, Md.

H. M. Siner, Philadelphia, Pa.

C. B. Siner, Philadelphia, Pa.

John Major, representing Philadelphia Brick Co., Philadelphia, Pa.

George W. Kelley, representing North Philadelphia Brick Works, Philadelphia, Pa.

W. E. Pearson, representing Virginia Brick Co., Washington, D. C.

Warren Griffiss, representing Baltimore Brick Co., Baltimore, Md.

T. A. Cahill, representing Independent Brick Co., Trenton, N. J.

J. H. Miller, Washington, D. C.

L. Perry West, representing West Bros. Brick Co., Washington, D. C.

George A. Bass, representing Hydraulic Press Brick Co., St. Louis, Mo.

Ralph Simpkins, representing Hydraulic Press Brick Co., Philadelphia, Pa.

A. E. Davis, representing Western Press Brick Co., Danville, Ills.

Thos. W. Pierce, representing Darlington Clay Products Co., Darlington, Pa.

Francis T. Owens, representing Ridgway Brick Co., Watsontown, Pa.

D. B. Potter, representing Thornton Fire Brick Co., Clarksburg, W. Va.

M. M. Morrow, representing Hocking Valley Brick Co., Columbus, Ohio.

Jas. C. Travilla, representing Wire-cut Lug Paving Brick Co., St. Louis, Mo.

Chas. Francis, Muskogee, Oklahoma.

R. C. Burton, representing Burton, Townsend & Co., Zanesville, Ohio.

J. M. McClave, representing Granite Clay Products Co., North Mountain, W. Va.

E. C. Shimer, representing Lehigh Brick Works, Allentown, Pa.

L. V. Halberstadt, representing Reading Shale Brick Co., Reading, Pa.

R. T. D. Hollowell, Washington, D. C.

T. A. Randall, Secretary National Brick Manufacturers' Association, Indianapolis, Ind.

THE TRAVELING SALESMAN.

The traveling salesman is coming fewer and higher. He has been drafted into the army right and left and the personnel rank is sadly thinned to swell the columns lined up under Uncle Sam's banner. And what is left comes higher because of increased passenger rates and increased costs all around. We have reached the point where a traveling man's expense account is a somewhat startling thing to contemplate, and the contemplation of which is likely to lead to more letter writing and less personal visiting. But here's hoping the trade doesn't go to extremes in curtailing the traveling salesman, for he is one of the most cheerful and inspiring of the commercial forces of the country without whom we would be inclined to grow lonesome and become rusty.

COMMON BRICK MANUFACTURERS OF NATION ORGANIZE.

CHICAGO, like every other city in the country may be "off" of building activities in the old-time sense of the term, for the period of the war, but nevertheless, the Windy City was the scene of an exceedingly important event to common brick manufacturers recently.

Common brick manufacturers representing an annual output capacity of over 2,553,000,000 common brick, met in the LaSalle Hotel on June 26th, at the call of William Schlake of the Illinois Brick Co., and organized the Common Brick Manufacturers' Association of America. In addition to the brick manufacturers actually represented, other companies totalling an annual producing capacity of 400,000,000 common brick, had sent in letters or telegrams signifying their approval of the movement and willingness to participate in it. This made a total output capacity represented of practically 3,000,000,000 common brick, or approximately 40 percent of the total output of common brick in the United States during the year 1916.

Mr. Schlake's statement of these figures in his informal opening talk was received with enthusiastic applause. His statement of the need for the organization and the important purpose which it could fill, not only in conserving the common brick interests through a period of unusual stress, but of lending a vigorous helping hand to the government in the prosecution of the war elicited still greater enthusiasm.

At the close of the informal discussion Mr. Schlake was elected chairman and Mr. C. P. Mertens, of the American Clay Machinery Co., secretary. Mr. Schlake, being named "delegate at large," attended the meeting called by Hon. Richard L. Humphrey, chief of the Materials Division of the War Industries Board, at Atlantic City on June 28, as the representative of the common brick interests.

It was decided that the annual meetings of the new association should be held on the second Wednesday of February of each year. The following gentlemen were elected directors to serve until the first annual meeting, next February: W. W. Dennis, Tom W. Green, W. N. Cary, Wm. Schlake, C. H. Bryan, C. J. Weber, Ernest Barkwell, Max Almond, Geo. A. Parry.

It was expected that these directors would meet shortly after the conference at Atlantic City with Mr. Humphrey, but it seemed likely that the first meeting of the directorate and the election of officers would be deferred until after a meeting of the building material interests of the country called by President Harry Wheeler of the National Chamber of Commerce for Atlantic City on July 15.

The objects of the Common Brick Manufacturers' Association of America as stated by the meeting on June 26, are to appoint a representative who will be stationed at Washington, D. C., to confer with and assist the United States Government in procuring common brick whenever and wherever it may need them and to do all in its power to stimulate and promote the use of common brick and take care of the common brick interests.

The qualification for membership was declared to be that a member must be a common brick manufacturer and that each application must be referred to and passed upon by the executive committee.

Common brick manufacturers and representatives have for a long time been seeing the desirability of a national organization. That such an organization should have been born in Chicago is not surprising, considering that the common brick people here have been working together more or less harmoniously for many years. They understand the value of team work and are natural leaders in the present movement. The war with its necessity for fuel regulations and federal rulings upon essential and non-essential industries brought a lot of talk to the point of action. It was stated among those who took part in the organization meeting, that recently the government, in haste to get available and cheap material for federal construction, went to a dealer in a certain eastern city and asked where 60,000,000 common brick could be secured. The dealer threw up his hands, it is said, and replied that there were not that many brick in the whole city. This is one of the many illustrations cited to show the need for the new organization. With the present association in the field, it is predicted that Uncle Sam could be supplied with 200,000,000 common brick, if necessary, and that on short notice. The executive head of the association could quickly place the orders, not only with reference to capacity allotment, but with reference to those plants capable of supplying the particular shade, etc., desired by the government.

William Schlake, Chicago, Ill.

"There is no reason why the government should not make a great use of brick in its construction work," said a well known Chicago dealer, who preferred not to have his name used. "When the various materials are classified on a basis of appropriate use, brick becomes the logical material for government construction work in this country. I classify houses as of two kinds—movable and immovable. The movable houses are primarily ships and cars. To construct these requires primarily wood and iron—yes, and latterly for ships, concrete. There is vital necessity for speeding up production on ships, and cars, always at a premium, are now harder to get than ever. The answer is that wood and iron—and, to a limited extent, concrete—should be conserved and their use chiefly devoted to the construction of the movable houses—the ships and the cars. But the government needs immovable houses, too—barracks, warehouses, and the like, and there is a demand for factory construction in order to speed up war necessities production. Brick can be used for that. Clay answers the question and solves the problem. Common brick organized can solve the problem and supply the needed material. That's what the new association can do."

THOSE IN ATTENDANCE.

W. W. Dennis, San Francisco, Cal.
W. N. Cary, Cary Brick Co., New York.
C. H. Bryan, Detroit, Mich.
John J. Moroney, Grand Rapids Brick Co., Michigan.
J. G. Mamer, The Mamer Brick Co., Benton Harbor, Mich.
Ernest Barkwell, The Barkwell-Farr Co., Cleveland, O.
S. Weidman, Madison, Wis.
Geo. E. Burnham, Milwaukee, Wis.
Oscar Zimbal, O. Zimbal Brick Co., Sheboygan, Wis.
W. P. Varney, Hydraulic Press Brick Co., Chicago.
Tom W. Green, Green Brick Co., Sioux City, Iowa.
D. P. Mahoney, S. C. Brick & Tile Co., Sioux City, Ia.
Wm. Schlakc, Illinois Brick Co., Chicago, Ill.
C. J. Weber, National Brick Co., Chicago, Ill.
A. Fisher, Chicago Brick Co., Chicago, Ill.
D. L. Gallevan, Carey Brick Co., Chicago, Ill.
C. H. Alsip, Calumet Brick Co., Chicago, Ill.
Wm. Bach, Bach Brick Co., Chicago, Ill.
F. Layer, Builders Brick Co., Chicago, Ill.
P. Treibul, Acme Brick Co., Chicago, Ill.
J. B. Tuthill, Tuthill Bldg. Mat. Co., Chicago, Ill.
H. Matz, M. Heckard & Sons, Canton, Ill.
F. W. Butterworth, Western Brick Co., Danville, Ill.
C. B. Obermeyer, Chicago, Ill.
C. P. Mertens, Chicago, Ill.
E. B. Felsenthal, Chicago, Ill.

Letters and telegrams were received from representative brickmaking firms in several states including Iowa, Nebraska, Missouri, Georgia, Virginia, Texas, Massachusetts and Ohio, regretting their inability to attend and expressing sympathy with and interest in the organization. Several of those in attendance went on to Atlantic City to participate in the meeting of the War Board there and at Washington.

RESTRICTIONS MODIFIED ON MANGANESE IMPORTS.

The War Trade board has, by a new ruling (W. T. B. R. 159), amended the restriction upon the importation of magnesite to permit its importation, under the back-haul proviso, permitting the importation of magnesite when shipped as return cargo from Europe and the Mediterranean coast of Africa, and when shipped from convenient ports where loading can be done without delay.

Importations of manganese ore from Asia and Australasia have, by another ruling, been prohibited as to ocean shipments made on and after July 20, 1918; and, to make this ruling effective, all outstanding licenses for the importation of manganese from those countries have been revoked as to ocean shipment on and after July 20, 1918.

Adequate supplies can be obtained, it has been found, from sources near by, entailing far less strain upon the tonnage resources of the United States during the present difficult period than shipments from the distant ports in Asia and Australasia.

The Charter Oak Brick Co., of Hartford, Conn., is running from one-third to one-half capacity. It has some orders in hand for enlargements for manufacturing plants and various other purposes, but its total orders fall far below the average for many seasons past.

Written for THE CLAY-WORKER.

HEARD IN NEW ENGLAND.

A RECENT TRIP through Western New England disclosed a rather discouraging condition of affairs in the brick manufacturing world. Few, if any, of the plants are operating to capacity and many of them have only a small portion of their works in operation. Some have not opened at all. Others are struggling along with a few men, getting out the small quantity wanted, and looking forward to the time when all will be crowded to capacity, and more, to satisfy requirements.

The I. L. Stiles & Son Brick Co., North Haven, Conn., is operating to about one-half capacity, perhaps, with a few arches laid up for burning. It is short of labor and short of orders, consequently little is done beyond satisfying a relatively small demand.

The North Haven Brick Co., located at the same place, is doing something, yet its operations are limited compared with what it ordinarily does at this season. Labor shortage and failure to reecive orders are the causes for the present reduced output.

The Stiles and Reynolds Brick Co., of Berlin, Conn., is using steam shovels, which help overcome the shortage of labor in the clay pits. About half capacity of the yards are operating. Several arches were laid up ready for burning, but the total quantity was far below what this company generally does at this season. But it is optimistic and expects a sufficient business when the disturbances due to the war are over to more than compensate for the reduced demand now.

The Park Brick Co., of Hartford, Conn., seems to be doing a fair business, considering the difficulties that all brick manufacturers encounter.

The Michael Kane Brick Co., of Hartford, is running to one-half capacity, and is turning out such brick as are wanted for small construction work in the immediate vicinity where deliveries can be made without recourse to rail shipments. The freight channels of New England are choked with munitions and other war supplies and though the roads are filled with freight cars the capacity is below the rolling stock required to convey the essential goods. Brick are not considered essential under present conditions.

Dyer Brothers, of Greenfield, Mass., have not started their yards at all this season, preferring to allow them to go without undertaking any business. And yet Greenfield is growing faster than any other town in western Massachusetts. It has doubled in population in the past few years and it is getting the bulk of the new business enterprises which are settling in that vicinity.

Only essential construction is in progress all over New England, and the necessity of anything to be built is measured by its relation to war work. If a building is not needed for war work then its erection is discouraged and badly as new houses are required for the comfortable housing of the increasing population the erection of all except war work structures has ceased.

In one respect many of the New England yards are independent. They are using wood for burning and have ample quantities of it available. The use of coal is not common in any of the yards in this section of New England. Wood, and plenty of it, is seen almost everywhere. If, therefore, they could get the labor nothing would prevent full operation of their yards since the fuel administration has not limited the use of wood as it has coal. The New England hills are still covered with wood and much of it is near enough to the yards to be hauled by team, consequently the yards are in better situation respecting fuel than those near the large centers where coal is virtually rationed and wood is unobtainable.

HIRAM.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

BRICK MANUFACTURERS have not given up all hope that the Government may not experience a change of heart in its fuel order which cuts down the production of brick fifty percent. While many tentative contracts have been cancelled for brick, there appears to be enough still on their books to more than take care of all possible production. As a consequence the local brick association is again making an effort to have a more generous allowance of coal granted them by the fuel administration. While some of the brick men are quite hopeful that the order will be modified, others say flatly that there is no chance, unless the Government itself is in need of building brick in excess of the probable production. These pessimists advise the manufacturers to seek some other use for their plants and some of them declare that they have found this use in a recent discovery made by I. V. Chown, an Oakland metallurgist. Chown claims to have discovered a process whereby iron ores of California may be handled by direct process. He says that his method requires no great capital to establish a plant as the ores can be reduced in kilns similar to those used in burning fire brick and pottery. This, Chown states, makes available to the iron industry several large pottery plants which are now either idle or running on a restricted fuel allowance. These plants, he alleges, could turn out enough iron to justify the establishment of steel plate mills in California. Chown claims that there is really nothing new in his process and that it has been in operation in Sweden and other places. Some of the brickmakers believe that this process may provide employment for their plants during the enforced shutdowns and are investigating Chown's claims.

When J. T. Roberts of the Stockton Fire & Enamel Brick Co., returned from Washington recently, he expressed the opinion that very little would come from the hearing held in Washington early in June. He says that nothing was brought out of which the commission was not informed. He does not think that any attempt will be made to fix a price on fire brick by the Government, as every factory seems to be working under different conditions. Mr. Roberts says that his plant is working at full blast to provide fire brick to the ships which are being built so rapidly in the Pacific Coast shipbuilding yards.

The Port Costs Brick Works has just closed a contract with the California-Hawaiian Sugar Co., which is building a large sugar refinery at Crockett, Cal. The contract calls for 400,000 brick for immediate delivery.

The principal building now going on in this section is being done at the various shipyards. The Bethlehem Shipbuilding Corporation has plans and has started to build additions to its Alameda plant which will cost in the aggregate over $20,000,000 within a year. These improvements will include many buildings and shops, the bulk of which will be of brick construction.

Two stories and a basement are being added to the John Bollman Co. factory at Fourth and Brannon streets, at a cost of $90,000. The building will be a brick and steel structure.

The building permits of San Francisco and Oakland both showed a handsome increase for the month of June when compared with the previous month. San Francisco's record was $1,115,339 and $805,274 respectively, and Oakland's $589,423 and $377,942 for June and May. Los Angeles also showed an increase to $778,680 for June from $355,934 in May. These increases demonstrate the healthy condition of business in the principal cities of the state, although they are doubtless due in a large extent to Government work.

The Southern California Clay Co., of Los Angeles, has started up work again on its clay deposit near Encinitas, and recently shipped two carloads of rock to the factory at Los Angeles. This deposit is especially valuable in making pottery and tile.

The El Cajon Mining Co., of San Diego County, has obtained permission from the state commissioner of corporations to issue securities for the purpose of financing its project. The company has an excellent deposit of ganster in San Diego County and proposes to work the deposit for shipment to fire brick making companies.

The school district on the outskirts of Palo Alto has just voted bonds for the erection of a $20,000 brick school building. It is understood that the bonds have been placed and that bids for the brick and terra cotta work will be called for in the near future.

The Porterville Magnesia Co., with offices in this city, has turned its attention to the manufacture of Fero-magnesite and are now making this product in commercial quantities. The company has been experimenting for a long time on this process and now report that it is a complete success.

The Standard Pottery Co., of Los Angeles, has been granted an amended permit which allows the company to distribute 12,500 shares among its stockholders in accordance with a resolution passed some years ago. The distribution of this stock has no effect upon the resources of the company and the action is taken merely to readjust some financial transactions which were closed several years ago.

The brown pottery clay deposits of New Mexico found in unlimited quantities in the hills and mountains arising from the Rio Grande Valley may soon become valuable commercially. The Albuquerque Chamber of Commerce is now investigating the value of Isleta clays found about the Pueblo village of that name lying twelve miles from the city. The development of this industry would add much to the prosperity of the Indians, who have the experience of centuries in pottery making. This pottery clay is to be sent to the Gill Clay Pottery Co., Indiana, where experts will test it.

The Borden Automatic Hammer Co. is preparing to erect a brick factory building in Emoryville.

Bids will soon be called for a brick and tile building to be used as a high school at Turlock, Cal. The plans call for a building to cost in the aggregate $65,000.

A large brick building at the corner of Union and Battery streets in San Francisco is about to have additions made which will aggregate $35,000, most of which will be for building brick. The building will be occupied by the Armour Packing company when completed.

The Alberhill Coal & Clay Co., whose deposits are located in the neighborhood of Corona, Cal., has been making improvements in its plant so that it may have a larger production of clay. At the present time the company ships most of its clay to the Los Angeles Pressed Brick Co., which is making fire brick for the Government ships. The Los Angeles concern is interlocked with the Alberhill company and the former has erected its plant No. 4 near the latter's deposits. The Los Angeles company now has three large stacks erected with four kilns of large capacity. The Alberhill company has been compelled to put on a night force in addition to the day force in order to keep up with the demands of the Los Angeles company. The company is mining on an average of 135 cars of clay a day of 20 tons each. Some of this raw material is shipped away, but the bulk is utilized by the Los Angeles company.

MID=SUMMER MEETING N. B. M. A. ATLANTIC CITY.

Incidental with Annual Convention of American Society for Testing Materials and a Conference with the War Industries Board June 26, 27, 28, 1918.

A LONG CHERISHED desire has been realized: a mid-summer meeting of the National Brick Manufacturers' Association, at Atlantic City in June. To be sure the captains of the clay industries gathered there in response to a summons issued by R. L. Humphrey, Chief of the Production Division of the War Industries Board; but just the same it was an N. B. M. A. meeting, in that sixty out of the seventy in attendance were members of the National Association. It is pleasing to observe in passing that some of those who were not members have since been enrolled on the membership roster. A happy incident of the first session of the Brick Manufacturers, was a statement by chairman Schlake that the new organization of common brick manufacturers recently formed in Chicago, was in no way in conflict with the parent organization and pledging loyalty and continued support to the latter. This assurance of harmony and good will between the associations was very gratifying to all present, including President Clippert of the N. B. M. A., who was among the conspicuous delegates at the conference.

Several members of the N. B. M. A. were delegates to the annual meeting of the American Society for Testing Materials and were kept very busy attending the various committee meetings. This is particularly true of the paving brick section which was represented by President C. C. Blair, Treasurer C. C. Barr, Secretary Will P. Blair, Frank B. Dunn, Fred Manning, W. H. Terwilliger and other lay members. Professor, now Major Edward Orton, was for the first time in many years, conspicuous by his absence. The affairs of Committee 3-C of the A. S. T. M., which has to do with the ceramic interests, was looked after by Secretary Albert V. Bleininger, who makes the following report:

MEETINGS OF COMMITTEES C-3 AND C-8, AMERICAN SOCIETY FOR TESTING MATERIALS.

Committee C-3 met as usual in connection with the annual convention of the A. S. T. M. at the Hotel Traymore, Atlantic City. The meeting was conducted with Prof. A. N. Talbot as chairman pro tem. The two items of interest were the discussions of the report by Major Edward Orton on an elaborate series of tests conducted upon bricks from fourteen states. This work included the determination of the compression strength, the modulus of rupture and the study of the effect of ice freezing vs. the destructive effect of crystallizing sodium sulphate salt. Major Orton found that four treatments with the sodium sulphate sufficed to show whether or not a clay had reached its maximum resistance to weathering agencies. It differentiates very sharply between the soft and the well burned product. For this reason the test is suggested as an addition to the tests already prescribed. The committee voted to submit the report for printing by the Society. It was also agreed to hold a meeting next fall for the consideration of final specifications for building brick.

The request of the executive committee of the society for the appointment of a conference committee to confer with Committee D-4 (Road Materials) was acceeded to and the following members are to represent C-3: Major Edward Orton, W. P. Blair and A. V. Bleininger. The conference com-

BOARD WALK SNAPSHOTS OF N. B. M. A. NOTABLES—President Clippert, Ex-President Salmen, Treasurer Sibley and Secretary Randall.

mittee, including W. E. Emley, who represented Major Orton, met with Messrs. Blanchard, Jackson and Johnson of D-4, and agreed upon the selection of Mr. Mehren, editor of the Engineering Record News, as chairman. The question to be considered by this conference committee is that of making such alterations in the operation and construction of the paving brick rattler which might improve the efficiency of the test, provided such changes are really necessary. It is proposed to ask for reports from both sides which are to collect arguments pro and con on any modification of the rattler test.

Committee C-8 acted upon three matters, the insertion of minor corrections in the methods of chemical analysis (C. H. Kerr, chairman); modifications in the procedure of the load test with reference to the rate of heating and the style of furnace (W. H. Fulweiler, chairman) and the adoption of a tentative standard method for making determinations of volume and porosity (R. C. Purdy, chairman).

All the proposed methods remain tentative for another year. The several propositions were adopted by the society without dissent.

The spacious lobby of the beautiful Traymore Hotel was the scene of many button-hole talks day and night throughout the week, so much so that it seemed like a real N. B. M. A. meeting. Many faces familiar at all National Conventions were conspicuous in the lobby and on the Board Walk, and the spirit of good-fellowship was all pervasive. This is indicated in the accompanying snap-shots of some who were caught by the Clay-Worker photographer as they meandered back and forth on the Board Walk for a necessary bit of relaxation from the strenuous conferences which lasted from early morning until late at night. It will be noted that our photographer caught the delegates in attitudes that indicate a careless, happy spirit. This occurred only at fleeting moments when they turned from the serious business of the meeting for a few moments of recreation. Jollity is inseparable from the Atlantic City spirit, for that reason it is an ideal place for such a meeting, especially during these war times, for it is necessary for our masters of industry to occasionally relax from the strain and stress now so general. Otherwise life would be too serious for proper analysis of the grave affairs which now confront every employer and producer in the land, especially those connected with the building world, which is woefully depressed as a result of the world war conditions.

All sessions and committee meetings of the A. S. T. M. were well attended and much important work was accomplished. A shadow darkened the proceedings on Thursday when it was announced that Secretary Marburg had answered the final summons of the grim reaper, though his death was not unexpected, for he had been seriously ill for some time. Dr. Marburg had served the Society as secretary since its foundation in 1902, and had endeared himself to the membership by faithful efficient service. A man of strong character and unusual ability, he had rendered distinguished service to his fellows in the engineering profession. The following memorial was adopted and ordered spread upon the records:

Memorial Resolutions on Death of Professor Edgar Marburg.

"The American Society for Testing Materials in annual meeting assembled, learns with profound sorrow of the death of its esteemed secretary-treasurer, Edgar Marburg, on June 27, 1918.

"In this hour of bereavement the Society desires to place on its records an acknowledgement of the great debt which it owes to Edgar Marburg. By zeal, industry, loyalty, insight and high ability exerted through sixteen years as secretary-treasurer of the Society, by guiding its actions, energizing its activities and guarding its name, he has exercised a powerful influence on the character, standing and usefulness of the society and on the making of specifications and tests for the materials of engineering. He is honored and revered as a master and leader. The imprint of his work will long remain.

"The Society extends to the family heartfelt sympathy for their great loss. May the knowledge that his fine character, strong manhood and great work in the field of engineering are appreciated by the membership of the American Society for Testing Materials become a part of their many treasured memories of his life and work."

One of the noticeable tendencies of the times is that of erecting more of the industrial chimneys and smokestacks of brick and other clay products. It may be that the scarcity and high price of metal has something to do with it, but the brick chimney has permanence and other qualities to commend it, enough of them that should grow in favor right along, just as the brick house should naturally grow in favor.

I GOT MINE IN ATLANTIC CITY

MILES OF SMILES ON THE BOARD WALK—Vice-President W. K. Hammond, New York; Ex-President Will P. Blair, Cleveland; Frank B. Dunn, Conneaut, Ohio; Fred L. Manning, Portsmouth, Ohio, and C. C. Blair, Canton.

LARGE PROSPECTIVE DEMAND FOR BRICK IN GOVERNMENT'S NEW HOUSING PROGRAM.

AS AT PRESENT OUTLINED, there will be a considerable demand for brick for the housing operations of the Government, but THE CLAY-WORKER representative in Washington is informed that this demand will be largely of a local nature, and if brick cannot be had in localities adjacent to or near the place where required for use, other materials will be used. The chief object is to avoid using transportation facilities and to do away with the delay which may be occasioned by bringing brick from distant points, to say nothing of the possibility of a further delay by having to wait until they are made.

In the Government's housing program there are a number of building operations of a permanent character, such as workmen's houses and apartment houses at the various navy yards —300 houses and 12 large apartment buildings being planned for the Washington navy yard, and fully double this number for the navy yard at Philadelphia.

The Department of Labor announces the following appointments in connection with housing developments projected in the communities hereinafter mentioned:

Erie, Pa. (Project No. 10).—Architect, Albert H. Spahr, Pittsburg; town planner, C. D. Lay, 15 East 40th St., New York City; engineer, Chester & Fleming, Pittsburg.

So. Charleston, W. Va. (Project No. 18).—Architect, Godley, Haskell & Sedgwick, 244 Madison Ave.; town planner, James L. Greenleaf, 1 Broadway, New York; engineer, James L. Greenleaf.

Bethlehem, Pa. (Project No. 24).—Architect, Zantzinger, Broie & Medary, 112 S. 16th St., Philadelphia, Pa.; town planner, T. W. Sears, 1424 Walnut St., Philadelphia, Pa.; engineer, L. J. H. Grossart. Bethlehem Steel Co., Bethlehem, Pa.

Washington Navy Yard. (Project No. 27 a. b.).—Architect, York & Sawyer, 50 East 41st St., New York City; town planner, none; engineer, none.

Washington Navy Yard. (Project No. 27 c.).—Architect (Temp.), James A. Wetmore, Acting Supervising Arch. Office, Washington, D. C.; town planner, none; engineer, none.

Washington Dormitories. (Project No. 54 a. b. c).—Architect, Waddy B. Wood, 816 Conn. Ave., Washington, D. C.; town planner, none; engineer, none.

Bath, Maine. (Project No. 59).—Architect, Parker, Thomas & Rice, 110 State St., Boston, Mass.; town planner, Lorring Underwood, 16 Exchange St., Boston, Mass.; engineer, Weston & Sampson, 14 Beacon St., Boston, Mass.

Quincy, Mass. (Project No. 62).—Architect, J. E. McLaughlin, 88 Tremont St., Boston, Mass.; town planner, H. J. Kellaway, 12 West St., Boston, Mass.; engineer, Ernest W. Branch, 21 Adams Blvd., Quincy, Mass.

Bridgeport, Conn. (Project No. 102).—Architect, R. C. Sturgis, 130 Boylston St., Boston, Mass.; town planner, A. A. Shurtleff, 69 State St., Boston, Mass.; engineer, none.

Puget Sound, Wash. (Bremerton). (Project No. 141).—Architect, A. H. Albertson, 725 Henry Bldg., Seattle, Wash.; town planner, E. T. Mische, 394 Jackson St., Portland, Ore.; engineer, Sawyer Bros., 410 Lindelle Bldg., Spokane, Wash.; George B. Sawyer, of Sawyer Bros., 407 White Bldg., Seattle, Wash.

Norfolk & Portsmouth. (Project No. 150 a. b.).—Architect, Geo. B. Post & Sons, 101 Pk. Ave., New York; town planner, none; engineer, Nicholas Hill, 100 William St., New York.

Norfolk & Portsmouth (Colored). (Project No. 150 c.).—Architect, Rossel Edw. Mitchell; town planner, none; engineer, none.

Watertown, N. Y. (Project No. 378).—Architect, Davis, McGrath & Kiessling, 175 5th Ave., N. Y.; town planner, F. Vitale, 527 5th Ave., New York; engineer, E. W. Sales, City Eng., Watertown, N. Y.

Philadelphia Navy Yard. (Project No. 502).—Architect, Rankin, Kellogg & Crane, 1012 Walnut St., Philadelphia; town planner, none; engineer, none.

Mare Island (Vallejo), Cal. (Project No. 581).—Architect, Geo. W. Kelham, Sharon Bldg., San Francisco; town planner, P. R. Jones, care of G. W. Kelham, San Francisco, Calif.; engineer, S. E. Kieffer, Mechanics Institute Bldg., San Francisco, Calif.

Alliance, Ohio.—Architect, Walker & Weeks, Cleveland; town planner, De Forrest, Rochester; engineer, none.

New London, Conn. (Project No. 157).—Architects, Hopin & Keen, 4 East Fifty-third St., New York City; engineers, Tribus & Massa, 86 Warren St., New York City.

Rock Island, Ill. (Project No. 246)—Architects, Cervin & Horn, Rock Island, Ill.; town planner, George E. Kessler, 423 Security Bldg., St. Louis, Mo.; engineer, W. S. Shields, Hartford Bldg., Chicago, Ill.

Moline, Ill. (Project No. 246a).—Architects, Cervin & Horn, Rock Island, Ill.; town planner, George E. Kessler, 423 Security Bldg., St. Louis, Mo.; engineer, W. S. Shields, Hartford Bldg., Chicago, Ill.

East Moline, Ill. (Project No. 246b).—Architects, Cervin & Horn, Rock Island, Ill.; town planner, George E. Kessler, 423 Security Bldg., St. Louis, Mo.; engineer, W. S. Shields, Hartford Bldg., Chicago, Ill.

Davenport and Bettendorf, Iowa (Project No. 246cd.)—Architects, Temple & Burrows, 208 Maine St., Davenport, Iowa; town planner, George E. Kessler, 423 Security Bldg., St. Louis, Mo.; engineer, W. S. Shields, Hartford Bldg., Chicago, Ill.

Niagara Falls, N. Y. (Project No. 404).— Architects, Dean & Dean, 137 South La Salle St., Chicago, Ill.

Indian Head, Md. (Project No. 496.)—Architects, Donn & Deming, 808 Seventeenth St., NW., Washington, D. C.

Alliance, Ohio (Project No. 621).—Engineer, R. Winthrop Pratt, Hippodrome Bldg., Cleveland, Ohio.

MAKE-BELIEVE ROUGH RIDERS ON THE BOARD WALK—D. B. Potter, Clarksburg, W. Va.; J. R. Martin, Dallas, Texas, and W. H. Terwilliger, Galesburg, Ill., on the "Water Wagon."

Bridgeport, Conn. (Project No. 102).—Engineer, Alfred Terry, 886 Main St., Bridgeport, Conn.

Lowell, Mass. (Project No. 398).—Architect, Henry L. Rourke, Lowell, Mass.

Portsmouth, N. H. (Project No. 604).—Architect, James H. Ritchie, 8 Beacon St., Boston, Mass.

Sharon, Pa. (Project No. 138).—Architect, George H. Schwann, Pittsburgh, Pa.

Niles, Ohio (Project No. 481).—Architect, George H. Schwann, Pittsburgh, Pa.

Warren, Ohio (Project No. 118).—Architect, George H. Schwann, Pittsburgh, Pa.

BRICK MAKING IN NEUTRAL EUROPE.

Brickmaking in that part of the world broadly known as neutral Europe is of more than passing interest right now both in the way of the prospects it may furnish for machinery, and as an illustrative example of what the great turmoil is doing to building operations the world over—not only in the countries at war, but in those not actively participating in the great struggle. For building operations of the usual kind are being curtailed almost everywhere, while special building resulting from war's demands is taking the place of it somewhat, but not to the extent of keeping the brickmaking industry normal all around.

About Half Normal in Denmark.

A first glance at the brickmaking activities, or rather the lack of activities, in the neutral countries of Europe, is not calculated to arouse enthusiasm over machinery prospects, for brickmaking there, as over here, has been curtailed considerably in the main, from one cause and another. But we can get a better view by looking further into the future, and that is the logical viewpoint to take. The curtailment in building operations for the war period should logically mean a building problem, and a building boom that will call for greater brick producing capacity some day in the near future —and that is the thing to look to.

There is in hand a series of consular reports, beginning with one from Consul Baylor L. Agerton, of Copenhagen, Denmark, that gives us a very good idea of existing conditions in the neutral countries of Europe, from which we may draw some useful conclusions about the future prospects.

The first point of interest about the Denmark report is in the fact that with the exception of some building with natural stone, the buildings of Denmark are constructed of brick. Wooden or frame houses, even for residences, are quite unusual. So it is a brick country, and the activity in brick making depends directly upon building operations. During the war period building operations have been so restricted that brickmaking has been but little more than half normal. In normal times about 500,000,000 brick are made and used annually in Denmark, while last year the total was only about 270,000,000.

Machinery Competition to be Met.

Now when the war is over and the busy building time comes on apace, it may be logically argued that the scarcity and higher price of labor will make an extensive demand for labor saving machinery. But we must not overlook the fact that when that time comes we will likely also come into competition with German made machinery, which heretofore has been something of a dominant item among those countries in Europe importing outside machinery. Also, it must be borne in mind that Denmark has some brick machinery plants and will likely seek to supply the domestic needs. In all this the one strong point in favor of American offerings is in that we have gone in more for the labor saving element in designing machinery and equipment than any of the older countries. Plainly, too, the best chance for machinery trade development will be with such offerings as furnish the maximum of labor saving qualities.

Netherlands Brick Makers Busy.

In the Netherlands practically nothing but brick is used for building purposes, according to a report from Consul Frank W. Mahin, of Amsterdam. Continuing, he says that the demand for brick is large and continuous. Formerly some Belgian brick was imported, but the war has stopped that. The Dutch brick is manufactured chiefly by machinery, which is made in Holland by factories that have made special efforts to supply the needs for such machinery. The cost of power is the big item now, though of course labor cost has increased too, so while the labor saving element in American machinery should constitute an appealing factor, it is probable that the best opportunities will be for burning methods and equipment that make for fuel economy. There is nothing in the report to give us a clew by which to compare fuel economy in burning there with the more advanced practices here, and here is a point seemingly worth looking into by those with modern kiln and burner offerings.

Industry Active in Greece.

Writing from Saloniki, Greece, Consul General George Horton says that brick is the most common kind of building ma-

IT'S ALWAYS FAIR WEATHER WHEN GOOD FELLOWS GET TOGETHER—William Conway, Jr., and William, Sr., Philadelphia; R. A. Bailey, Springfield, Mass.; J. F. Reynolds, New Haven, Conn.; Max D. Almond, Corsicana, Texas, and B. W. Ballou, Buffville, Kansas.

terial used in the Saloniki district and in all New Greece. Also that the great fire last August, which swept a large portion of the city, created an enormous demand for building material, and the capacity of the various local brick yards have been taxed to the limit. Concrete is entering as a factor, but even at that there has been great activity in brickmaking for some time now, with indications of a continuance of activity. He says there is only one plant in his district using machinery, which has an annual production of about 6,000,000 plain hollow brick, 5,000,000 roofing tiles and 1,000,000 brick for flues and chimneys. The several hand yards produce about 8,000,000 brick a year.

The brickmaking machinery in use there, our consul says, is of French and Swiss manufacture, but that the brick men can be interested in American machinery if they can be shown that a good return in production will be secured by its use. Labor and fuel cost both enter as factors, and here as elsewhere in Europe it is equipment strong in the labor saving element, or new ideas in fuel economy that will likely make the strongest appeal.

In Spain it is pretty much the same story, with variations. Consul General Carl Bailey Hurst, reporting from Barcelona, says among other things:

Brick Making in Spain.

The method most generally pursued here is extremely simple, no machinery being employed. In the open-air yards of Spanish brick factories are large wooden troughs where the ingredients for the bricks are properly mixed by hand. This compound is then taken into a room to be run into molds of the form of the bricks. The room in which this process takes place merits description. In the center there is a long, oval hollow about 50 feet in length, 15 feet wide, and about 5 to 8 feet deep. Work is carried on at either end of this oval, but never at both ends at one time. In the depression a fire is built to keep the room dry. Underneath the floor of the room and near the walls of this depression fires are made for the purpose of baking the brick. On the floor level near the brink of this oval depression there are many molds, simply made of iron and cement, capable of holding a single brick. The material which has been compounded in the brickyard is run into these molds, properly patted down so as to be solid, and leveled off with the flooring by means of a trowel. In all this work no machinery is used. After the material in these molds has baked sufficiently the fires, both on the outside and on the inside of whichever end of the oval depression is in use, are extinguished, and the brick are allowed to cool and get hard and are then taken out into the brickyard to be piled up for shipment. One end of the oval depression is thus always ready for continued work.

A wide market for brickmaking machinery would seem to exist here, as little such machinery is now in use, practically none imported, and none manufactured locally. The vast amount of hand labor employed could be replaced by machinery to advantage.

Spain having remained neutral the effect of the war on the brick business has been chiefly in restricting exports, and it is hoped by those interested that the exportation of bricks will be resumed when peace comes, as this was formerly an important branch of the industry in Spain. In the year 1914 about 13,000 tons of common bricks were exported. This export fell in 1915 to 6,000 tons and in 1916 to somewhat less than 4,000 tons, chiefly owing to the high freight rates, leaving little or no profit in the business, and also owing to the lessened numbers of vessels now required for other merchandise.

Small tiles and mosaics of fine baked clay, gres, or faience, and glazed tiles are extensively produced here and are employed almost exclusively in this country for flooring, roofing, and exterior decoration, as well as for interior wall facings. There are 179 factories in Spain, exclusive of the Vascongadas and Navarre Provinces, for the manufacture of roofing tiles, pavement tiles, hollow and solid tiles, and mosaics. Exports of tiles, roofing tiles, and mosaics amounted in 1914 to 7,000 tons, in 1915 to 6,000 tons, and in 1916 to nearly 9,000 tons.

Chalk Stone in Switzerland.

Consul William P. Kent, reporting from Berne, Switzerland, says there has been a decreased demand for brick the past few years, due in part to the competition of chalk stone, but evidently in part, too, to war conditions. Anyway, he says that a number of brick and tile plants have been closed down for a year or two. The normal yearly turnover of brick, he says, is from $15,000,000 to $20,000,000, but at present will not run above $5,000,000 to $10,000,000. The biggest inroads into the clay brick industry seems to come from an artificial brick made from chalk sand. It sounds like lime-sand brick, but the report is not clear enough to verify this point. The report indicates a very small, if any need for imported machinery. Electric power, water produced, seems to be used extensively now for brickmaking as well as for other purposes, fuel being very scarce and high in price. It is probable, too, that the fuel problem has been a factor in reducing activity in clay brickmaking, which suggests the possibility of a revival when the war is over and fuel is available again at reasonable prices.

Those interested in following up the subject of machinery

A QUARTET OF HIGH FLYERS—J. H. Miller, Washington, D. C.; Warren Griffis, Baltimore, Md.; H. H. Stafford, Augusta, Ga.; T. L. Herbert, Nashville, Tenn., and a Gentleman of Leisure, A. L. Gladding, of San Francisco, Cal.

prospects in the neutral countries of Europe can obtain assistance, and in most instances lists of brick and tile manufacturers, by making application to the Bureau of Foreign and Domestic Commerce, at Washington, or -any of the branches.

BUILDING APPROPRIATIONS RECOMMENDED.

Some idea of the general change of feeling and attitude at Washington toward building operations throughout the country may be had from the following report of appropriations for public buildings approved recently: Recommended to Congress by the Treasury Department: Oak Park, Ill.,- $150,000; Atlantic City, N. J., $200,000; Gloucester, Mass., $125,000; Lima, Ohio, $125,000; Newark, N. J., $975,000; Waterbury, Conn., $185,000; Jamestown, N. Y.; $125,000; Scranton, Pa., $350,000; Cumberland, Md., $85,000; Canton, Ohio, $300,000; Warren, Ohio, $11,000; Houlton, Me., $60,000; Findlay, Ohio, $50,000; Wausau, Wis., $65,000; Butte, Mont., $275,000; Utica, N. Y., $285,000; Norfolk, Va., $500,000; Fargo, N. Dak., $400,000; Ithaca, N. Y., $100,000; Terre Haute, Ind., $160,000; Vincennes, Ind., $75,000; Norristown, Pa., $75,000; Erie, Pa., $220,000; Plattsburg, N. Y., $80,000; Washington, Pa., $90,000; Lowell, Mass., $350,000; Williamsport, Pa., $110,000; Savannah, Ga., $500,000; Lawrence, Kans., $45,000; Saginaw, Mich., $200,000; Alexandria, Va., $100,000; Manchester, N. H., $200,000; Hagerstown, Md., $175,000; Sioux City, Iowa, $300,000; Sedalia, Mo., $175,000; Decatur, Ill., $100,000; Clarksburg, W. Va., $200,000; Macon, Ga., $180,000; Brownsville, Tex., $275,000; Wichita, Kans., $600,000; Astoria, Ore., $160,000; Columbia, Mo., $90,000; Zanesville, Ohio, $120,000; Little Rock, Ark., $700,000; Reno, Nevada, $120,000.

MAGNESIA AND ASBESTOS SUBJECT OF CONFERENCE.

The War Industries Board authorizes the following:

A committee representing the manufacturers of magnesia and asbestos coverings and textiles of the United States was accorded a hearing before the priorities commissioner and other representatives of the War Industries Board for the purpose of presenting claims for preferential treatment in procuring supplies of fuel, raw materials, and transportation service.

The hearing clearly developed the fact that a free and proper use of magnesia and asbestos in heating plants and in pipe coverings enormously conserves fuel; and because the demands for fuel far exceed the supply now available, or that can be made available, it was determined that the production of magnesia and asbestos coverings should be stimulated in so far as they are used in connection with heating plants and other uses measurably curtailed.

GRANITE PAVING DECREASES.

The U. S. Geological Survey report on the granite paving block industry in 1917 shows a decrease in quantity of 13 per cent. as compared to 1916, which in turn showed a decrease of more than 4 per cent. as compared to 1915. The decrease in total value was not much, however, because increased costs and higher prices entered here as in all other lines of industry and manufacture. Prices on granite pavers ranged from as low as $33 to $69. Wisconsin continued as the leading state in production, followed by Maine, Massachusetts, and New Hampshire, in the order named.

Sales were reported from 18 States in both 1916 and 1917, South Carolina replacing Delaware in 1917. Three States, Connecticut, Massachusetts, and Vermont, showed increase in quantity in 1917. Maine showed a decrease of only 1 per cent. The largest decreases were in California (90 per cent.), Georgia (50 per cent.), Rhode Island (64 per cent.), and Virginia (44 per cent.).

Written for The Clay-Worker.

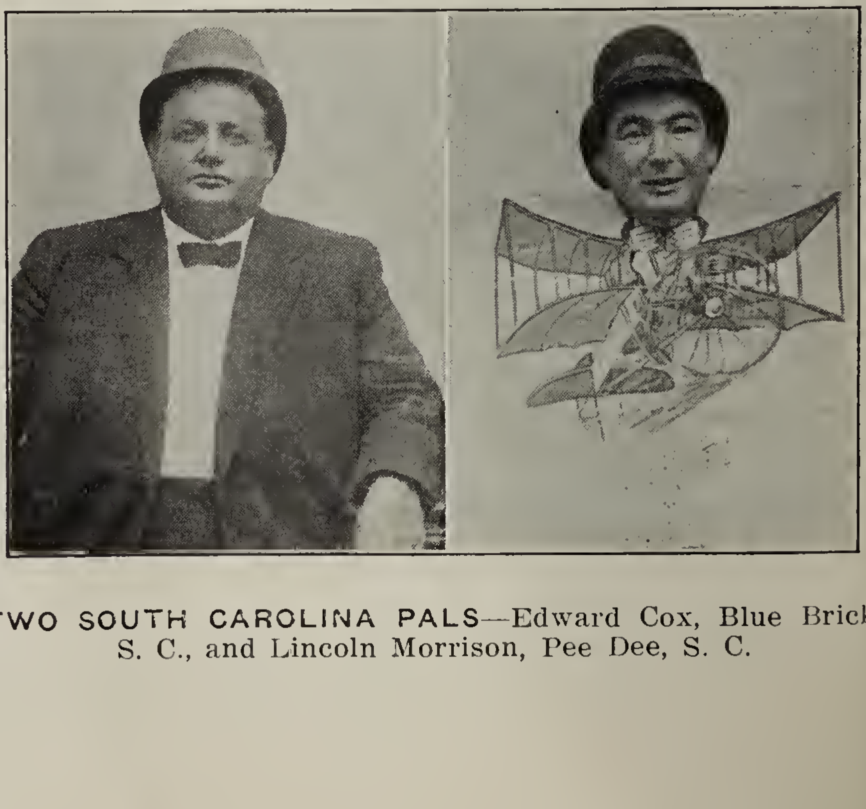
SEEN IN NEW JERSEY.

CONDITIONS have not changed for the better since the last issue. It is a fact that building was never at so low an ebb in this section of the country as it is now. Yet, perhaps the statement at the beginning may be modified somewhat since inquiry is increasing and brick manufacturers and brokers have had more inquiry through June and the early part of this month than they have seen before for several months. But none of them are optimistic enough to think that these inquiries mean larger sales. It appears that many who would like to build are feeling about among the brick men to discover what prices are and how the situation stands at present. And that is about the limit of the brick business now. Nor do any of them look for important improvements until after the present necessity for conserving everything disappears and surely that will not be at once.

Some manufacturers are delivering by truck and they are getting some business; but when the railroad administration refuses cars for shipping and the fuel administration refuses coal for burning, the brick man's lot is not altogether happy. But he realizes that he is called upon to do something for the winning of the war and this seems to be his share. Accordingly he follows the regulations without murmuring and hopes for the better times when the war is over.

Frank H. Hall has bought the Homestead Brick Works, Inc., at Homestead, and has had men at work for several weeks clearing the yards of all pallets and pallet racks. The brick left at the plant have not been shipped, but have been newly stacked awaiting shipment. The sheds remain as they were, not even the destruction wrought by last winter's storms has been repaired. No statement has been made respecting the probable disposition of this property. In the days when brick business was good the proximity to Jersey City, with its rapid growth, made this a desirable property. But now it is almost worthless. It costs something to maintain it without working and nothing is coming in.

The Standard Brick Company, at Mountainview, is in the hands of a receiver. No schedule of assets and liabilities has been made public, but with business in the present state it is understood that the creditors will get only a small percent-



TWO SOUTH CAROLINA PALS—Edward Cox, Blue Brick, S. C., and Lincoln Morrison, Pee Dee, S. C.

age. If business had been maintained as it was before the war the business company would have met its obligations without difficulty.

Nathan H. Sloan of Paterson, says: "I have been getting rather more inquiries for varied sized lots during the past week or two, but they by no means equal what has been asked for in a much shorter time previously. I am able to get cars through occasionally, but it is frequently dubious business. When they start they come better than they did, however, since the present railroad administration seems anxious to get them to their destination and unloaded as soon as possible. But the difficulty lies in getting cars for shipping. We could dispose of a great many more brick than we have for the past year if shipping facilities permitted. Even the high prices do not seem to stop buying, if the stock is available. It is the difficulty of shipment and the scarcity of men to operate the yards which are causing us the greatest concern. Many contracts are in abeyance until the situation clears sufficiently to permit the use of cars for shipping or it is possible for yards to get men with which to do business."

Only one or two yards are in operation in the Hackensack district and they are working to only fractional capacity. No more men are available and the situation looks dubious to manufacturers who are undertaking to do their part in waiting while others fight. Heavy losses are sustained by all these brick manufacturers, but it is impossible for them to do otherwise and they are endeavoring to make the best of the situation, hoping for as speedy relief as possible from the onerous consequences of the German lust for conquest. Some deliveries are in progress by motor truck: one or two barge loads have gone down the river, but not a car has been loaded this spring. Hence the business done is too small to be considered. Some are so pessimistic that they think brickmaking is done on the Hackensack River after a continuous operation of nearly one hundred years. The first yard was opened in 1830 and it has been in constant operation since until this year. Now it is closed and some fear that this, as well as others, will never be reopened.

In the Raritan district the situation is looked upon as substantially the same as it is in the Hackensack district, only more men are at work and more clay products are turned out. But the reduction in building operations and various other influences are combining to create a condition which is discouraging alike to manufacturer and those who want brick. High prices for all clay products prevail and business is reduced to a minimum. Perhaps, however, the desire of the Government to buy considerable quantities of brick for structural purposes may help these yards since they are equipped to turn out large quantities at short notice. But no indication of this desirable outcome is seen as yet. If that is a future possibility it will help immeasurably in tiding over present difficulties.

A. L. B.

MANUFACTURING OPPORTUNITIES IN THE STATE OF WASHHINGTON.

The west is always big, breezy and enterprising when it undertakes anything, and this is reflected; that is, the typically western bigness, in a pamphlet of book size gotten out by the Bureau of Statistics and Immigration of the state of Washington. The work is by Henry F. Giles, Deputy Commissioner of the State Bureau of Statistics and Immigration, and it gives about all the data and information one could ask for about the state of Washington, from the big trees in the forests, which make up the frontispiece of the publication, to the details of the agricultural prospects and possibilities. Any manufacturer looking for a new place to open up and operate will find this publication both interesting and worth while. Incidentally we note among the illustrations of manufacturing enterprise a page picture of a brick and lime plant near Spokane, in connection with which we are told that there are unlimited clay possibilities of all kinds in Washington and in almost every county, and that limestone is common in many sections. There is included, too, a list of manufacturing establishments that are especially requested by cities, towns and villages of the state, together with the probable amount of capital required in each case.

THE BUSINESS OF BABBITTING.

To the average man doing the work the business of babbitting for journal boxes consists essentially in cleaning out the box and smoothing off the journal, fitting the two together, daubing around with mud, heating the metal, skimming off the dross and pouring to get a smooth, solid box without spews or blow holes. When he accomplishes that he feels like he has done a good job. If afterward the journal runs hot, or under heavy duty the metal cuts out and seems soft, either the quality of the babbit is to blame or it is thought someone has neglected the business of oiling.

To those who think and act this way there is a little fact brought out some time ago by the American Society for Testing Materials that should be taken in and digested.

"Pouring the babbitt too cold tends to produce a granular or coarse crystal formation, and pouring it too hot tends to produce a softening effect."

This fact was established after a series of very convincing experiments, and it proves conclusively that good babbitt may render poor service through heating and pouring at the wrong temperature. So the item of temperature is one of importance and one that should be given consideration in the business of babbitting.

The same experiments established a pouring temperature of 460 degrees C. as being the best for both lead and tin-base babbitts, with a permissible range of 10 degrees each way. This means that in melting babbitt the temperature should be regulated between 450 and 470 degrees C. It is a whole lot easier, of course, to set forth this fact than it is to follow it. If you have temperature registering devices which you can use in your babbitting ladle the matter is simple. If there is enough babbitting to do to justify, it will pay to purchase such an instrument.

For the benefit of those who are not provided with temperature testing devices it may be said that broadly speaking the man who melts and prepares the babbitt over an open fire is very likely to pour it too cold, while the man who uses a forge fire may get it too hot.

There is an old rough and ready test of taking a dry splint or splinter of wood an dipping it into the babbitt or stirring around in the dross with it. If it takes fire, say on three dippings, the metal is considered at about the right temperature. If it doesn't take fire after a series of dippings you will know the metal is not hot enough. This serves as some guide to the temperature of the metal, but if you want to reduce babbitting to an exact science provide yourself with temperature registering devices and either a melting pot or a fire with which you can control it inside the range given.

Government authorities, or for that matter other authorities, do not agree on what constitutes a fair physical valuation of any kind of plant from a clay-digging machine to a railway system. Some contend that it should be valued at cost less depreciation, while others argue that a fair valuation is what it would cost to replace it. Somewhere between the two extremes we ought to find a happy medium.

AN INDUSTRIAL FURNACE SECTION ORGANIZED.

The United States Fuel Administration, Through Its Bureau of Conservation Creates a Department Which will Prove Helpful to the Ceramic Industry.

AN IMPORTANT branch of the United States Fuel Administration recently formed is that known as the "Industrial Furnace Section Bureau of Conservation." The new organization is to deal with industrial furnaces in the clay, lime, cement, glass and iron and steel industries, the purpose being to investigate conditions through district bodies consisting of a chief, an advisory board and competent engineers, the work of which will result in the proper suggestions as to change in methods, or the ways and means for economy in the use of fuel in this large field.

This organization will be especially helpful to the clay industries where it is essential to reduce fuel waste. Every clay plant will be inspected by competent engineers and a thorough study will no doubt bring to the attention of the manufacturers changes in the construction or operation of their kilns that will mean much saving in coal and labor.

It is not the intention of the Industrial Furnace Section to compel any clay products manufacturer to make any large expenditure, such as the erection of improved kilns in order to conserve fuel, but they will be expected to make those improvements which can be made at little cost, and greatly reducing the amount of fuel required.

The section is expected to rate the plants according to their efficiency and providing the rating is low, will use such pressure necessary to compel the manufacturer to make the improvements. It is expected that in times of fuel shortage the factories with high rating will be allowed to operate while those of low rating will not be supplied with fuel. It is therefore absolutely necessary that the men selected to make the investigations, be competent and thoroughly honest in their judgment. The government is asking for volunteers from the various industries. We hope every competent ceramic engineer will lend his assistance in this important work. If you believe you are fitted to serve in this capacity of inspector engineer of clay plants in your state or adjoining states, kindly send in your application to Mr. A. F. Greaves-Walker, Chief of Industrial Furnace Section, Bureau of Conservation, United States Fuel Administration, Washington, D. C.

At the recent meeting of the American Ceramic Society, that organization passed a resolution in which the secretary was instructed to write each member urging all who were fitted for the position and could donate part of their time, to this work to offer their services to the government. This should result in the selection of competent engineers for the investigation work.

The following detailed statement from the United States Fuel Administration gives clearly the purpose and operation of the Industrial Furnace Section.

1. The new section will be known as the "Industrial Furnace Section Bureau of Conservation, U. S. Fuel Administration."

2. The section will have jurisdiction over all industrial furnaces consuming any kind of fuel, except those producing power. For the present however, it is the intention to pay no attention to steel plants. These may receive attention later after receiving the sanction of the War Industries Board.

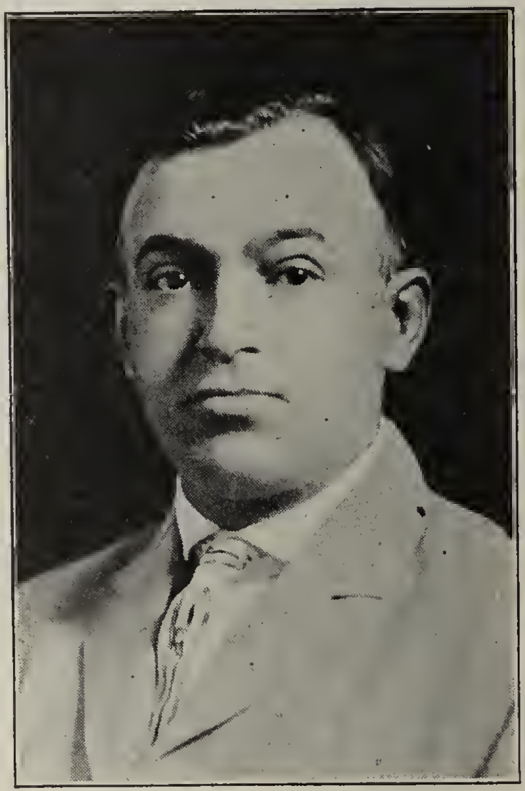
3. The country will be divided into districts, each district being comprised of one or more States or parts of States.

4. Each district will be under the supervision of a "District Chief" who will have the title of "District Chief—Industrial Furnace Section."

5. The District Chief will be directly connected with the Bureau of Conservation, U. S. Fuel Administration, and will report to the "Industrial Furnace Section."

6. Each District Chief will appoint an Advisory Board composed of prominent men connected with the industries affected in his district. This board might also contain a member of the State Councils of Defense and representatives from the Technical Societies. It is expected that such a board will give strength and influence to the work and will, if composed of the right men, guarantee the co-operation of the manufacturers.

7. Each District Chief will recommend for appointment a sufficient number of engineer-inspectors to properly cover his district. These men will be volunteers and will be regularly appointed as officials of the U. S. Fuel Administration. These appointees will have the title of "Fuel Administration Engineers—Industrial Furnace Section." It is expected that these men will be recruited from the various industries affected and from any other source available. Technical men will be preferred, but good practical men will also be acceptable. These men will not necessarily be full time men as it is expected that two or three day's time each week will suffice if a sufficient number can be obtained so as to confine their work to their home districts.



J. E. Randall, District Chief Industrial Furnace Section, Bureau of Conservation, U. S. Fuel Administration, Indianapolis.

8. District Chiefs will have their headquarters at their present offices.

9. All expenses of District Chiefs and Engineers will be paid by the U. S. Fuel Administration. This will include all additional office and stenographic expenses necessary. Expense vouchers will be supplied by the Administration.

10. All reports made by the Engineers will go to the District Chief of his district who will make such reports as required to the Industrial Furnace Section. District Chiefs will have the authority to dismiss any Engineer whose work is unsatisfactory.

11. District Chiefs will not be expected to make inspections unless they desire to do so in cases which they think require special attention.

12. In cases where a District Chief wishes to temporarily change his headquarters, as during a vacation, he may have his Engineers report to him at any place he may designate.

13. The Bureau of Conservation will assist the District Chiefs in finding suitable Engineers, by advertising in trade and technical magazines and by applying to State Councils of Defense and through other means of publicity.

14. The amount of time required of a District Chief is a variable factor. Naturally more time will be required during the organization period than afterward. It is hoped that the work can be so managed as not to interfere with his regular duties. The work will naturally become lighter as it progresses.

15. The object of this section is to conserve fuel by improving the methods now in use. It is not the intention to compel a company at this time to make large expenditures such as for continuous kilns in order to do this, but improvements that can be made at small cost will be insisted upon. Plants will be rated according to their efficiency and if the rating is low, pressure will be brought to bear to compel them to make improvements.

Efforts will be made to shorten the burning or firing period, to properly insulate crowns, and walls, repair poor brickwork, install fire box doors, improve draft and install pyrometers, etc.

It is expected that the ceramic industry will be tackled first. This will include pottery, clay products, lime, cement and glass. At the same time paint, varnish and other nonmetal industries will receive attention whenever an Engineer can visit a plant without going out of his way to any great extent.

16. Forms, questionnaires, etc., will be furnished by the Administration as soon as a District Chief is ready to begin work.

17. Work can begin as soon as one Engineer is appointed and the organization can be then built up as rapidly as possible.

Mr. James E. Randall, Junior Editor of the Clay-Worker and Secretary of the Indiana and Illinois Drain Tile Manufacturers' Association, recently received the appointment of District Chief of Indianapolis, covering the State of Indiana and a large portion of Michigan. Men qualified to serve in the capacity of engineers and willing to give part of their time to the Government in this important work in the states of Indiana and Michigan, should get in touch with Mr. Jas. E. Randall, 211 Hudson St., Indianapolis, Ind.

FUEL ADMINISTRATION MODIFIES RECENT CURTAILMENT ORDER.

Dr. H. A. Garfield, United States fuel administrator, has issued an order modifying his order of April 13th restricting the use of fuel in the manufacture of sanitary ware. The modifying order says that permission to use fuel in excess of 50 per cent. of the previous year's requirements may be granted upon individual application to the Fuel Administration, proof being submitted with such application that the increased production is necessary to meet war-time needs. The modified order took effect on April 19th.

It is understood that the above order was made necessary by a considerable shortage in sanitary products essential for government building operations for the carrying on of war work.

An order issued by the Fuel Administration at the same time says that wood and peat, when not required to be transported by railroad, may be used as fuel in the manufacture of brick and all clay products and sanitary ware in excess of the quantity of fuel permitted by the order of April 13th.

All such users are required, however, to at once notify the state fuel administrators of their respective states in writing of the exact time when they began the use of such wood and peat for fuel.

DISTRICT CHIEFS FOR INDUSTRIAL FURNACE SECTION FOR U. S. FUEL ADMINISTRATION APPOINTED.

Mr. A. F. Greaves-Walker, chief of the Industrial Furnace Section, Bureau of Conservation under the U. S. Fuel Administration in a recent communication stated that the following district chiefs for his section had been appointed:

William E. Dornbach, District of Philadelphia (Eastern Pennsylvania and Eastern Maryland).

Prof. Geo. H. Brown, District of Trenton (New Jersey, Delaware).

Harry C. Cramer, District of Louisville (Kentucky, Tennessee).

Frank H. Riddle, District of Pittsburg (Western Pennsylvania, Western Maryland, West Virginia).

James E. Randall, District of Indianapolis (Indiana and Michigan, except Detroit, district).

Lloyd R. Stowe, District of St. Louis (Missouri, Iowa, Kansas).

Prof. J. S. Shaw, District of New York City (New York, Vermont).

Prof. Ross C. Purdy, District of Boston (New England, except Vermont).

Prof. Arthur S. Watts, District of Columbus (Ohio and Detroit District).

Prof. C. W. Parmelee, District of Chicago (Illinois and Wisconsin).

Prof. Ira A. Wiliams, District of San Francisco (California, Washington, Oregon).

We urge on all those who consider themselves competent as ceramic engineers to write Mr. A. F. Greaves-Walker, Washington, D. C., or the District Chief, volunteering his services to the U. S. Fuel Administration in this good work of placing the clay product plants of the country on a more efficient basis. For complete detail regarding purpose of this new organization see article on page 46 of this issue.

OFF FOR FRANCE.

D. F. Billingsley, of The Clay-Worker Staff, Called to Y. M. C. A. Service.

Uncle Sam's army of workers "over there" is growing to large dimensions. Those engaged in providing and caring for the real fighters compose a vast army in itself. Representative men from all sections are being called to the colors for this non-combatant service. Mr. Denton F. Billingsley, vice-president of T. A. Randall & Co., and for many years a conspicuous figure at all N. B. M. A. conventions, has been appointed to the recreational department of the Y. M. C. A. for service overseas. He is now in training in Wisconsin, and expects to sail within a very short time. It is needless to say that the best wishes of a host of friends go with him.

A CONFERENCE HELD IN PITTSBURGH.

(Continued from June issue.)

Report of the Sub-Committee on the Field Examination and Sampling of Clays.

Gentlemen—In making the following recommendations regarding the field examination and sampling of clay deposits, it is suggested that the Geological Surveys confine their attention, for the present at least, to those deposits which are located in accessible districts.

Attention may also be called to the fact that certain formations are very unlikely to yield any high grade materials. This applies to surface deposits, including flood-plain, lake, estuarine and glacial clays, ferruginous residual clays, and pre-carboniferous formations.

The recommendations regarding field study and sampling, apply, therefore, especially to: 1. Plastic refractory clays, including fire clays, ball clays, and secondary kaolins, and (2) white burning residual clays.

Field Examination.

The points to be considered are:

1. Location.
2. Workability.
3. Extent and thickness.
4. Visible impurities affecting commercial value.
5. Facilities for purification.

Location.

A clay deposit to be workable should be situated fairly close to lines of transportation. In general, commercial deposits should be located not farther than six miles from transportation lines.

Workability.

A deposit must be worked either by open pit or underground methods. In the first case the amount of overburden in proportion to the thickness of the deposit, must not be excessive, and should not in any case exceed 25 feet for a deposit at least 10 or 12 feet in thickness. For thinner deposits the overburden must be proportionally less. The character of the overburden must be considered with reference to its utilization for concrete, building sand, gravel, or the production of common clay products.

For underground mining we must consider the character of the roof and floor, as well as the thickness of the bed. Without a good roof, mining becomes both costly and dangerous.

To be workable by underground methods the clay or shale bed should not be less than 4 feet, and preferably 5 to 6 feet. For trackage purposes the last named figure is essential. Where it is possible to mine coal in conjunction with the clay, a thinner seam may be workable. Some deposits are workable by circular or square shafts, lined with cribwork. The question of drainage, whether natural or artificial, should also be considered.

Extent and Thickness.

These points should be carefully determined for the purpose of estimating the tonnage. Careful measurements should be made of the thickness of the deposit, wherever outcrops can be found as well as records are available. The geologic nature of the formation should also be taken into consideration, to serve as a guide for judging the persistence of the beds. By the use of levels and sections in neighboring ravines and on road cuts a continuous section can often be obtained. Where outcrops are insufficient to yield satisfactory information, borings should be made with a two-inch auger or core. A post-hole auger may sometimes be used advantageously in digging through the overburden.

Occasionally the co-operation of the owners of the land on which the promising clay has been found can be secured in extending the sampling to boring and sinking test pits. This method gives more accurate data. This work should be done under the jurisdiction of a survey official.

Visible Impurities Affecting Commercial Value.

The impurities most easily discovered are sand, concretions of limonite, siderite, pyrite, or calcite, gypsum crystals and rosettes. Calcium carbonate may be present in a fine state of division, in which case its presence can be detected by acid. Residual clays from limestone may contain chert. Those lumpy impurities cannot be easily eliminated, unless the clay is washed, or unless they occur in definite bands.

Sand grains, consisting of quartz, feldspar, or mica can be removed by washing, even if uniformly distributed through the clay, provided the clay disintegrates readily, and yields a sufficient percentage of washed product. If the clay is to be washed, to be of commercial value it should yield at least 15 per cent. of refined product, provided it is of white burning character.

Facilities For Purification.

In order to make washing practicable a sufficient supply of clean water should be available. There should also be a sufficient level area for location of the washing plant site, suitable space for disposal of tailings, and convenient drainage of waste water.

Sampling of Deposit.

Samples are usually taken from the outcrop. This may either be an inclined or a horizontal surface. Preparatory to taking the sample, the surface must be carefully cleansed of all dirt and stained clay. Trenching 18 inches wide and 12 inches deep should if possible, be dug across the outcrop at right angles to the strike. The spacing of the trenches is to be determined by the extent of the outcrop and uniformity of the clay. For an exposure several hundred feet in length, trenches can be dug 100 feet apart. The size of the sample is to be determined by the extent of the outcrop.

As the method outlined above will yield more material than is necessary for even a complete series of tests, the clay from the different trenches can be reduced to lumps not exceeding 2 inches in diameter mixed together, and reduced by quartering to about 50 pounds which is to be sent to the testing laboratory, a lump sample of about 10 pounds being sent to the office of the Survey. The quartering should be done on a heavy sail cloth at least 6 feet square and as the amount of material is reduced, the lumps should be further broken up.

If the deposit shows distinct difference as regards structure, color, and texture, each bed showing these individual differences should be sampled separately, provided these beds are sufficiently thick to be mined by themselves, or can be thrown out if undesirable.

If the deposit is being worked and a clean face is exposed, the sampling cut can be made narrower and shallower than specified above, a sufficient number of cuts being taken to give a quantity of at least 200 pounds. Where the clay is stored in stock piles the sample may be taken from these, provided they are representative. At least one-half of the sample should be taken from the lower third of the pile. In the case of those clays that are being purified, a sample of both the crude material, and the clay as prepared for the market should be taken.

The samples collected as outlined above shall be placed in clean, tight-weave, strong sacks. The sample should be numbered, the number being stamped on one end of a tin or zinc tag, 3x1 inches. This tag is to bear the sample number and name of the Survey sending it. This tag is to be bent in half and attached to two feet of cord, the end of which is tied in the neck of the sack. The sack should be shipped with a linen label, bearing address and sample number and name of sender.

Record Sheet To Be Prepared in Field.

This is to be kept by Survey to whom the results belong, only the sample number being sent with the sample.

Agency taking same: Sample No.
Name of sampler:
Location:
Name of owner of property:
County:
Township:
Section:
Location with reference to some permanent dwelling, crossroads, railroad station, or topographical sheet:
Extent of deposit:
Whether uniform in thickness or lenticular:
Geologic formation:
Strike and dip of beds or vein:
Whether sedimentary or residual:
Thickness of overburden:
Sketch section of clay deposit, with thickness of each bed of different character:
Visible impurities and kinds:
Nature and kind of floor, if visible:
Nature and kind of roof, if any:
Is the deposit being worked?
If so, for what purpose?
Present output in tonnage of clay:
Market value per ton:
Has a technical examination of deposit been made?
If so, by whom, and where can record be obtained?
Transportation line:
Description of washing or any other refining operation:
If deposit is being worked, describe method of operation:

Decision of the Conference with Regard to the Methods of Field Examination and Sampling.

After discussion, the conference voted to adopt the above report as representing general methods of field examination and sampling which were to be followed by all states participating in the work. It was also voted to request the United States Geological Survey to print the record sheets required for the field work and also the report sheets to be used by the testing stations.

Professor Ries was appointed a committee to present this request to the Federal Survey.

The report of the Committee on Standard Methods of Testing Clay was then read by A. V. Bleininger, chairman.

The report, which we hope to give in "The Clay-Worker" in the very near future, was discussed in considerable detail by the members of the conference and was then adopted.

Mr. Stull stated that the Columbus Laboratory of the Bureau of Mines would furnish all of the raw glaze required for the testing work.

As a result of the discussion it was estimated that a provisional charge of two dollars per sample would be made for the preliminary examination and that the cost of the complete series of tests would be determined from the data furnished by the various testing stations after the work was under way, and that after this cost had been determined each survey would pay for its own tests in accordance therewith.

Mr. Ries stated that the United States Geological Survey stood ready to co-operate to the fullest possible degree in the proposed survey work and that if any of the states so desired, the federal survey would arrange to send a representative into the field with them.

Mr. Watts stated that the Bureau of Mines was planning to undertake some survey work into the kaolin districts of some of the southern states and expected to take carefully selected samples and investigate them as to their possibilities for refinement for use in the paper and white pottery industries. It was expected that the states of North Carolina, South Carolina, Georgia, and possibly Virginia, Maryland and Delaware would be included in the proposed survey, which, however, would be confined to white burning clays.

It was pointed out that survey work was especially needed in some of the following states: Alabama, Mississippi, South Carolina, Colorado, Wyoming, the Black Hill regions of South Dakota, Utah, California, Montana and the Dakota formation of Nebraska. Attention of the Committee on Legislation and Public Information was directed to these states.

Messrs. DeWolf and Hice were appointed a Committee on Ways and Means.

The conference then adjourned.

CO-ORDINATION OF BUILDING INDUSTRIES.

One of the interesting printed speeches coming our way is one on the Federalization of the Building Industries by F. E. Miller, which was presented at a gathering of builders supply dealers in Chicago in February. The object of this printed address is to crystalize interest in the subject of the federating or co-ordinating of something like two hundred different organized units of the building industry, which includes builders exchanges, organizations of architects, organization of dealers and manufacturers of material of different kind.

This is a subject that was touched upon somewhat at the face brick meeting at French Lick last winter, and it is a subject that merits action as well as discussion. First and last the building industries represent perhaps more of the man power of the United States than any other line of effort except that of farming, and while various units of it have been fairly well organized right along there has not been any active federating of the different organizations so as to secure the co-ordination which is recognized as one of the essential needs of the day.

The building industry as set forth in this paper produces an aggregate of two billion dollars worth of real enduring property yearly, but it is divided up into so many material associations that it is seldom practical to bring full pressure to bear on any movement in which the industry is vitally interested or to get thorough co-operation in the industry as a whole.

There is special need for co-ordination between the different units of the building industry this year because of the war element which has taken about a fourth of the man power of the wage earners of the United States into war activities of one kind and another, so depleting the ranks in the building industries that it is only by thoughtful work and thorough co-ordination that we may expect to maintain the industry as it should be and make the progress we should make. We need more getting together in the building industries between the different branches, and this printed speech voices the right spirit.

TRUCKING BOTH WAYS.

The efficiency experts are on the job now and trailing the motor truck with a view to developing greater efficiency by having what is called return loads. Moreover, they are getting at this return load idea from many different angles, some of which get in to the clay working field.

There is no doubt whatever but what having a truck for making delivery out to country points on good roads helps in the game of selling brick. Often the farmers are too busy at their own work to do this hauling. Now comes the other side of it, that of the prospective hauling of a return load of the farmer back to the town.

As having bearing on this phase of the matter a recent Press Bulletin of the Council of National Defense indorses the idea of establishing rural motor express lines to connect the farms with the cities. The plan is to use the return loads system by which farmers can ship into the city all varieties of farm products and receive in return implements, seeds, fertilizer and other supplies.

While no specific mention is made of brick and building material this should enter into these calculations. Incidentally too, this indicates that the brick man with a truck may be called upon to haul some return loads, when he is making deliveries of brick to country points. To what extent he may be able to do this advantageously remains to be seen.

One point we can all see very plainly, however, is that the development of motor truck connection between cities and towns in the farming countries surrounding them makes an imperative call for the improvement of these roads. It is not enough for the National Chamber of Commerce and the government authorities to encourage the improvement of the more prominent highways. We must go further and improve all the roadways leading from the farm to the market.

THE PATRIOTIC SHEEP.

I am a patriotic sheep.
  I did my bit, and (damme!)
Although I grew my soft, warm wool
  Expressly for a Sammy,
A lady bought it, I have heard,
  (And may the foul fiends get her!)
She took my patriotic wool
  And made herself a sweater!

—Frances Morrison, in Indianapolis Star.

MEN AND WOMEN WANTED FOR GOVERNMENT SERVICE.

FROM THE VARIOUS departments of the Government come requests for assistance in securing much needed workers. R. T. Stull, Superintendent of the Bureau of Mines, Mining Experiment Station, Columbus, Ohio, advises us that the U. S. Civil Service Commission announces open competitive examinations for assistant ceramic engineer (salary, $1,800 to $2.400 a year) and a ceramic assistant (salary, $1,200 to $1,800 a year), for men only. One vacancy in the position of assistant ceramic engineer and four vacancies in the position of ceramic assistant for duty at Columbus, and future vacancies requiring similar qualifications will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion. For further particulars address Mr. Stull as above.

Trained Persons for Work in the Patent Office.

J. G. Newton, Commissioner of Patents, Washington, D. C., requests that we call attention through The Clay-Worker columns to the need for technically trained persons for the examining corps of the Patent Office. Men or women are desired who have a scientific education, particularly in higher mathematics, chemistry, physics and French or German, and who are not subject to the draft for military service. Engineering or teaching experience in addition to the above is valued. The entrance salary is $1,500.

Examinations for the position of assistant examiner are held frequently by the Civil Service Commission at many points in the United States. One is announced for August 21 and 22, 1918. Details of the examination, places of holding the same, etc., may be had upon application to the Civil Service Commission, Washington, D. C., or to the Patent Office.

Should the necessity therefor arise, temporary appointments of qualified persons may be made, pending their taking the Civil Service examination. Application for such appointment should be made to Commissioner Newton.

Combustion Engineers for the Oil Conservation Bureau.

W. Champlain Robinson, Director of Oil Conservation, U. S. Fuel Administration, Oil Division, asks that an announcement be made through The Clay-Worker to the effect that the above bureau is desirous of securing a combustion engineer for each of the following districts, who will act as an inspector visiting all plants within his district using fuel oil and natural gas: Boston, Providence, New York City, Philadelphia, Pittsburgh, Buffalo, Detroit, Chicago, Minneapolis, Tulsa, New Orleans and San Francisco.

It is desirable to have these men act as volunteers where possible but the administration is prepared to pay a reasonable compensation for men who cannot afford to give their services to the Government. Only men who have had experience in fuel oil and natural gas combustion would be of value.

Demand for Stenographers and Other Clerical Help.

The need for stenographers, typewriters, bookkeepers and other clerical workers continues, the positons listed being open to both men and women. For places of examination for the positions listed (see table below), application blanks, and any other information desired, applicants should apply to the representative of the U. S. Civil Service Commission, postoffice of any important city.

DIFFERING IDEALS.

By William C. Redfield, Secretary of Commerce.

Great causes emerge slowly out of the cloud and dust of battle. Whatever the immediate cause may have been of Germany's beginning the war and of England's resistance to her, as to neither of which is there any doubt in my mind, it remains true that it is only within recent months that we in America have seen facts as they are. France grasped them earlier; England, I think, later, but both have had them clearly in view for a long time.

The basic fact now emerging is so vital that when it is once seen, even by the socialist, when its existence is once grasped by the most convinced pacifist, they must by reason of their very beliefs join in vigorous resistance to it. These are the facts: There are two opposing ideals at war, each of which is intolerable to the other, one of which must conquer the other. One of these ideals is that in which you and I have been brought up—that for which our fathers fought—that for which the Barons opposed King John—that for which the Roundheads opposed King Charles—that for which, amid many errors, the French Revolution overthrew the old monarchy. This is the ideal of the rights of man. We call it democracy, freedom, liberty, but it comes back to the ordinary rights of the individual to live his own life in his own way and to his willingness to let other men do the same.

Opposed to this is the ideal of the autocrat, of power imposed from above, of the conception of the state as supreme, and of you and me as pawns to be moved by the state at will.

One of these ideals make the common man the base and is essentially humane. To it childhood, manhood, womanhood are sacred things to be supremely regarded and cultivated. The other reverses it all. The supreme thing is the state and its general interests. If the interests of those who control the state—that is to say, if the idea of the autocrat—is different, then the rights of the plain man and woman and child must go. Whatever the state thinks for its interest is imposed upon the individual without regard to cruelty, humanity, or aught else.

It is normal to these two ideas that the German soldier should kill children, that German aviators should spread poisoned candy, that the home should be looted, women dishonored, children slain. These are but incidents in the path

Title	Branch of Service	Usual Entrance Salaries	Date
Stenographer-typewriter	Dep't'l, Wash., D. C.	$1,000-$1,200	Every Tuesday
Stenographer	Dep't'l, Wash., D. C.	1,000- 1,200	Every Tuesday
Typewriter	Dep't'l, Wash., D. C.	1,000- 1,200	Every Tuesday
Clerk with knowledge of stenography or typewriting	Dep't'l, Wash., D. C.	900- 1,200	July 19, Aug. 16, Sept. 27, Oct. 25
Bookkeeper-typewriter	Dep't'l, Wash., D. C.	1,000- 1,200	Every Tuesday
Clerk-bookkeeper	Dep't'l, Wash., D. C.	1,000- 1,200	Every Tuesday
Calculating machine operator	Dep't'l, Wash., D. C.	900- 1,200	July 24, Aug. 21, Sept. 18
Multigraph and writer press operator	Dep't'l, Wash., D. C.	1,000- 1,200	July 24, Aug. 21, Sept. 18
Operative (card-perforating machines)	Dep't'l, Wash., D. C.	720- 1,000	July 24, Aug. 21, Sept. 18
Statistical clerk	Dep't'l, Wash., D. C.	900- 1,200	July 24, Aug. 21, Sept. 18

of autocracy. It is just as normal, on the other hand, that an American soldier should be seen with six little French children about him—at once their companion and protector. From this viewpoint the war is one of great spiritual forces —right against wrong—Christian against Apollyon, the latest, perhaps the most dreadful form of the world-long conflict. More and more as these facts merge into light, I believe we shall become united.

NEW JERSEY CLAYWORKERS HOLD WELL-ATTENDED MEETING.

The annual summer meeting of the New Jersey Clayworkers' Association was held June 25 in the library of the Trenton Country Club, Trenton, N. J. The meeting was well attended, there being present over fifty clayworkers. There were two sessions, one in the forenoon and one in the afternoon, during which five splendid papers and an illustrated lecture were presented and thoroughly discussed, and important business of the association transacted.

President August Staudt, of the Perth Amboy (N. J.) Tile Works, presided, and in his address, which was the first formal number on the morning program, pointed out the benefits of associational work and what the organization had done and was doing for the clayworkers of New Jersey.

The following papers were presented: "The Cause of 'Blowers' in Solid Porcelain Sanitary Ware and the Cure," Leroy H. Minton, General Ceramic Company, Metuchen, N. J.; "The Relation of American Ceramic Society to the Ceramic Industries of the United States," George H. Brown, Rutgers College, New Brunswick, N. J.; "Recent Developments in Ceramics," A. V. Bleininger, Pittsburgh, Pa.; "The Fuel Orders," A. F. Greaves-Walker, Chief, Industrial Furnace Section, U. S. Fuel Administration, Washington, D. C.; "Abrasives and Abrasive Wheel Manufacture" (illustrated), H. A. Plusch, Philadelphia, Pa.

In addition to the above, George E. Hoffman, Trenton, secretary of the Manufacturers' Council of the state of New Jersey, gave an interesting talk on the work of that organization.

One of the important accomplishments of the meeting was the adoption of a resolution offered by Mr. L. H. Minton for the purpose of organizing a local section of the American Ceramic Society, providing for an application by the New Jersey Clayworkers' Association to the American Ceramic Society for recognition as the New Jersey Local Section, to be known as the New Jersey Clayworkers' Association and Local Section of the American Ceramic Society.

At the noon luncheon, which was served in the Trenton Country Club, the clayworkers were favored with a short address by Governor Edge, which was much appreciated by the delegates.

One of the features of the sessions not on the program was an impromptu speech by Charles A. Bloomfield, an ex-president of the National Brick Manufacturers' Association, as well as of the New Jersey Association, on the benefits of organization work.

LOUISVILLE BRICK NEWS

Common brick has reached the record price of $17.50 in Louisville, that is, when it is delivered on the job. It is almost enough to make some of the old brick walls shake with envy, for in the bygone days Louisville was one of the low markets of the country. The demand is not very active, in fact it is mighty quiet so far as private building goes. There is government work here and there that helps out some, though, both in the demand for brick and for hollow tile.

The Coral Ridge Clay Products Co. has just finished filling an order for hollow block in government work at Charleston, S. C., of 40 cars, and now has in hands another order that will keep them busy with this product for the next two months. Meantime we have a powder plant proposition coming on here, which will surely mean some clay products, but just what kind and how much is not known yet.

The Hillenbrand Brick Co., and the Coral Ridge have consolidated for the time being in the matter of production, the Coral Ridge plant taking over the fuel allowance of the Hillenbrand plant and making the brick for both, while the Hillenbrand plant will remain idle. Endorsement of the state fuel administrator has already been secured, and this gives the Coral Ridge plant fuel for just about a normal brick run.

H. C. Cramer, of the Lexington (Ky.) Brick Mfg. Co., and president of the Kentucky Clay Products Association, has been named District Chief of the Industrial Furnace Section of the Fuel Administration for Kentucky and Tennessee, and has been giving over a fair share of his time to naming committees and getting his forces organized for this work. We are glad to see the clayworking industry recognized in this fuel matter, and Mr. Cramer is a splendid choice for the place.

COLONEL.

NEW YORK AND VICINITY.

An official of the Greater New York Brick Company said a few days ago that agents of the government have been to the headquarters of the Company and have asked prices upon about half of the output of the concern. The agents said that the price paid would be based upon the last year's cost sheets plus a percentage for profit. Nothing was said about what was wanted of the brick. One-half of the output of this concern would be a quantity which indicates some big structural project in view, but details are lacking. Neither was it said that the brick would actually be bought. The Greater New York Brick Company is one of the projects of John B. Rose and it seems to be in a good condition. It is handling some brick, but of course by no means as much as it ordinarily does.

Brickmaking up the Hudson River is not particularly active this season. Probably not half of the capacity of any one plant is occupied with making brick. They couldn't sell them if they made them and they can't get men to make them if they could sell them. The difficulties work two ways and cause no end of trouble for the manufacturer who would be glad to get the business if he could. But under present circumstances he can only look forward an dhope for a change which wil give him some of the good business which all theorists and others predict after the war times. It is sure that troubles are thick and numerous now, but they can't be cured, so the manufacturer is enduring them as good naturedly as he can.

BURTON.

TRADE NOTES

The Holyoke Brick Co., of Holyoke, Mass., is operating about half the capacity of its yards. Not much activity was seen, but a few arches were burning and a few men were at work in the pits.

L. G. Bergren & Son, of San Francisco, were the successful bidders for the contract to furnish the brick and terra cotta for the Palo Alto bank building, now in course of construction at Palo Alto. Their bid of $36,872 was the lowest of seven submitted.

P. S. Kamm, who was recently elected secretary of the Porterville (Cali.) Magnesite Co., has resigned his positon to enter the aviation corps of the army. He is now in training at one of the southern camps.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
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☞Subscribers when ordering a change of address should give both the old and new address.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
226 East Ohio St. T, A. RANDALL & CO. [Inc.], Indianapolis.

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My Country, Right or Wrong—My Country!

CURRENT COMMENT.

While many must fight many more must work.

* * *

There is but little work for the price cutter these days.

* * *

Generally we get out of life in proportion and kind to what we put into it.

* * *

One of the leading industrial problems of the day is how to get the most work done with the fewest men.

* * *

The scarcity of iron should make for the use of more clay pipe in connection with plumbing and sanitary drainage.

* * *

The printed word is doing its bit strikingly enough these days to convince the most skeptical that advertising has great value.

* * *

Those German papers have been kidding themselves along with talk about levying a big indemnity upon the United States, but there is a time coming when Uncle Sam will be in a position to have a real sayso that may bring some of their chickens home to roost.

* * *

One of the good signs of the times is a growing disposition to make industrial housing permanent.

* * *

One of the interestin gproblems of the day is how to take a vacation without being taken for a vagrant.

* * *

Some common brick prices have been quoted recently that would have been very startling a few years ago.

* * *

The prevention of loss by fire is one of the things to include in the list of patriotic duties these days. Build with Brick!

* * *

When the season is over it will be found that many a man has learned some new wrinkles about keeping the records of his business, and in this the Federal Trade Commission is doing good work.

* * *

When we get enough brick paved roadways, and more motor trucks in action, there may come a day when the railroads will be anxious for more business than is coming their way, which will be a good thing for the general public.

* * *

Incidentally those new government powder plants being erected here and there in the heart of the country call for housing, and a fair share of this housing should be of the permanent kind that is had by using clay products—Build with Brick.

* * *

One important difference between the clay workers and many other manufacturers who are now concerning themselves with trade after the war is that the brick trade is largely local and mainly domestic. The export item, while a growing one, is a small thing compared to the great possibilities in the home field.

* * *

Denmark brick and tile manufacturers have suffered curtailment through fuel needs, too. A report from Commercial Agent Norman L. Anderson, at Copenhagen, says that of the 294 brick works in Denmark, 89 did not operate during 1917. At the beginning of the year there were about 70 million brick on hand, and the year's output was 230 million, but only about 200 million were sold and delivered, leaving a stock of 100 million on hand.

SUGGESTION FOR AFTER-THE-WAR PREPAREDNESS.

War needs are drawing so heavily upon the timber resources of the country as to make it apparent that the scarcity and value of stumpage after the war will make necessary a greater turning to brick for structural purposes. As a matter of preparedness the clayworking industry might well get busy at inaugurating another "Build With Brick" poster campaign to remind the public again in good time of the best building material to be had.

STRANGLING EFFICIENCY.

Private business, and individuals generally recognize that a close check on individual production and capacity, and reward, either by bonuses or premiums in addition to regular wages, is stimulating to effort, makes for the greatest efficiency and to properly compensating those who accomplish more. In the face of this, however, Congress persists in keeping alive a provision that on government work neither stop watches nor time checking of individual shall be done, nor shall bonuses be paid or other rewards given those who accomplish more than the average man. That looks mightily like strangling efficiency at a time when we need to encourage speeding up.

HOUSING THE FARM TRACTOR.

One of the interesting big developments of the day is the farm tractor, and the housing that must of necessity go along with it. Between the tractor, the motor truck and the auto the farm barn buildings are undergoing quite a change. There is now a call for a series of buildings to house these machines, or else a new style of out building to include in one housing tractor, auto, truck and farm implements—a sort of tractor barn and garage combined. Already one sees plan offerings along this line, pointing the way clearly to a new order of things in farm out buildings.

Here is an opportunity for the clayworkers to get into the game as advocates of the fireproof idea and take a hand in shaping design offerings that will include clay products as the materials of construction.

The tractor is coming to the farm in great numbers these days, and it is seemingly marking the rising tide of a new era, for the signs not only indicate more and more tractors, but along with them goes a more general use of labor saving machinery on the farm. In the proper housing of all this—including the farm auto and truck—there seems to be a good opening for a big future trade in clay products.

LUMBER PRICES.

The authorities at Washington have, after conference with the lumbermen of the country, established maximum f. o. b. mill prices on fir of $26 per thousand feet, and on yellow pine, $28, as the mill-run basis. These are the two most important structural woods, what constitute the main items in the lumber stocks of retail dealers, and the prices named are, roundly speaking, just double the prices obtained in normal times. This should make a very inviting opening for clay products, even at sharply increased prices, but there is another factor enters before the final price is reached. This was illustrated by an incident at a government employment bureau one day. The employment manager of a big contracting concern was rounding up a lot of workmen for a job in hand, which called for both bricklayers and carpenters. For the carpenters he paid 55 cents an hour, while for the bricklayers he paid 75 cents an hour. Lumber prices are reaching the point where lumber will in the main be replaced by clay products in building operations if we can but get enough bricklayers to do the work at prices comparable with that obtained by the carpenters.

THE MAILS SERVICE.

Entirely aside from the evident unfairness of it and all the argument about the zone system for the mailing of publications, our mail service today furnishes an interesting contrast, for while some of it is flying, the bulk of it is suffering from slowness. The establishing of airplane mail service will certainly mark an historic step in the history of the post office department. Meantime, though, complaints are coming in from all parts of the country that the burden of war service seems to have broken the backbone of the mailing system. First class mail moves slowly and uncertainly, giving plain evidence of congestion and confusion. So while the public looks with interest upon that special speeding up from the use of airplanes, it would also welcome a little prosaic hustling along of regular first class mail through the usual channels.

ROADWAYS OR WATERWAYS?

We have reached a point where there is a question arises as to which should preferably receive attention and development, the roadways or the waterways, with the odds in favor of the roadways. Plainly we should make the best practical use of our inland waterways, but somehow the general public has been hard to keep enthused upon this subject, and so far all the talk and money expended has brought discouragingly meager returns. Meantime here comes the motor truck making of the public roadway a much more important factor in the general scheme of transportation. And the results being obtained from the use of trucks on well made and paved highways are such as to make one question if it were not better to spend government money building and paving roads than to spend it building dams and improving rivers. There are instances where roads and rivers may be used in combination, just as we use the dirt roads in combination with railroads. Taking it all together, however, the indications are that the cross country roadways, properly improved, are to fill a much larger mission in transportation than the inland waterways and might well receive the lion's share of attention and money for development.

RAILWAY ADMINISTRATION.

The government administration of the railroads, while readily conceded as an essential necessity of war times, gives every promise at this writing of becoming very unpopular before the war is over. There is a general reluctance to complain and to criticise for the very simple reason that no right thinking man wants to hamper or harass the government in any way in any department at the present time, but there is evidence that the drastic increases in both freight and passenger rates are decidedly unpopular. There is an expressed undercurrent of feeling that consolidation under government control should effect enough economies in administration to meet the demand for higher wages and the increased costs without such marked advances and freight and passenger rates.

There is evidence to that in the matter of collecting claims, while the work may be simplified and made less difficult, the decision on the part of the administration will be more arbitrary and technical. In fact, some of the instruction being sent out in relation to claim settlements sound a bit iminus,

Then finally comes the question of freight credits and the arbitrary methods of government administration. Business men of standing, who heretofore have had no trouble about settling their freight bills, or getting a car released to them for unloading before the freight bill was presented for payment, now find themselves called upon to give bond, and to toe the mark generally in a manner that will prove irksome to say the least. Administering our railroads is plainly a big job, and a difficult task, the understanding of which fact makes the public tolerant of much in the way of hardships and inconveniences, but we are reaching the point where railway administration as we are having it is rapidly losing in popularity.

MICA SCHIST AS A REFRACTORY.

Mica schist has entered the lists as a refractory material, for use in furnace lining. The quantity of mica schist produced for this purpose in 1917 being 39,975 short tons, an increase of 20 per cent. over the output in 1916.

Mica schist, according to a special U. S. Geological Survey

Table of Contents

American Ceramic Society Meeting 21
Government Announces Preferential Treatment for Hollow Tile Manufacturers... 31
Burning Clay Wares........ 32
Government Takes Over Large Part of Building Brick Output 34
Common Brick Manufacturers of Nation Organize... 36
Restrictions Modified on Manganese Imports 37
Midsummer Meeting N. B. M. A., Atlantic City......... 38
Large Prospective Demand For Brick in Government's New Housing Program... 41
Brickmaking in Neutral Europe 42
Building Appropriations Recommended 44
Magnesia and Asbestos Subject of Conference........ 44
Manufacturing Opportunities in the State of Washington 45
The Business of Babbitting.. 45
An Industrial Furnace Section Organized........... 46
Fuel Administration Modifies Recent Curtailment Order. 47
District Chiefs for Industrial Furnace Section 47
Off for France............. 47
A Ceramic Conference Held in Pittsburg 48
Co-ordination of Building Industries 49
Trucking Both Ways....... 49
Men and Women Wanted for Government Service...... 50
Differing Ideals............ 50
New Jersey Clayworkers Hold Well Attended Meeting 51
A Safety First Relay....... 78
The Diversity of Products... 78
Roller Bearings............. 83
Speeding up the Line Shaft.. 83

CORRESPONDENCE:

Heard in New England..... 37
Pacific Coast News......... 38
Seen in New Jersey......... 44
Louisville Brick News...... 51
New York and Vicinity..... 51
News from Evansville and Southern Indiana......... 76

EDITORIAL:

Current Comment........... 68
Suggestion for After-the-War Preparedness........ 68
Strangling Efficiency........ 68
Housing the Farm Tractor.. 69
Lumber Prices............. 69
The Mails Service.......... 69
Roadways or Waterways... 69
Railway Administration..... 69
Mica Schist as a Refractory. 69

MISCELLANY:

Bought a French Hotel to Billet U. S. Troops....... 31
The Traveling Salesman.... 35
Granite Paving Decreases... 44
The Patriotic Sheep........ 49

INDEX TO ADVERTISEMENTS ON PAGE 84.

report on the subject is (is one of the commonest of the metamorphic rocks, consisting of mica and quartz, with which may be associated certain other minerals, such as garnet and staurolite.

Owing to its marked foliation, its softness, and its generally unattractive appearance, it has not been greatly used as structural stone or as paving or crushed stone. It was once quarried near Bolton, Conn., for use as flagstone, but it was too soft to withstand the wear upon it in places of much travel.

The mica, to which the softness of mica schist is due, however, successfully withstands a very high temperature, and as the stone can be readily cut into blocks of the desired shape, mica schist has therefore been used considerably as furnace lining. The mica schist quarried for this use is found in eastern Pennsylvania, at places conveniently near the metallurgical plants in which it is required.

Standard Size of Building Brick.

Editor The Clay-Worker:

At a meeting of the Oklahoma Clay Products Association, a group of brickmakers of this state, the question came up as to what constitutes a standard size common brick. We would be pleased to have this information; that is, the standard size, when it was agreed upon, and by whom. Would like this data published in The Clay-Worker.

A. B. KENYON,
General Manager, American Brick and Tile Co.

The National Brick Manufacturers' Association, in 1889, after due deliberation, adopted as a standard size for common brick, the dimensions of 8½x4x2¼ inches. This was reaffirmed in 1899, and has been the commonly accepted standard for common brick throughout the country. At the recent national convention in Indianapolis, a committee appointed for the purpose recommended that the standard size for common brick be changed to 8x3¾x2¼ inches. The report was adopted unanimously, so that those dimensions now stand as a standard size for common building brick, see page 292 of the March convention issue of the Clay-Worker.—(Editor.)

CURRENT NEWS NOTES.

W. H. Foster, president of the General Fireproofing Co., Cleveland, Ohio, has been elected chairman of the Youngstown, O., division of the resources and conversion section of the war industries board.

The plant of the Fremont (O.) Tile and Brick Co., including buildings and machinery, was destroyed by a fire July 16, caused from an explosion. Henry Swift, general manager who had charge of firing a kiln, was badly burned, while assisting in fighting the flames.

A. B. Hunter of Irvona, and H. B. Hartswick of Clearfield, Pa., have made application for a charter for the Fulton Clay Products Company, of Bigler, Pa., for the purpose of mining and selling fire clay and manufacturing fire brick, ground clay and other clay products. H. B. Northcroft of Irvona, is to be superintendent of the plant which will be built at once.

July 1, the business of the Manown Manufacturing Company, Pittsburg, Pa., manufacturers of fire brick and dealers in fire clay, was taken over by the Pittsburg Coal Company, and will be conducted as the Manown Mfg. Co. Department of the Pittsburg Coal Co., J. W. Barber, formerly vice-president of the concern has been made manager of the new department.

Enterprising Constable.—"You're under arrest," exclaimed the officer with chin whiskers, as he stopped the automobile.

"What for?" inquired Mr. Chuggins.

"I haven't made up my mind yet. I'll just look over your lights, an' your license, an' your numbers, an' so forth. I know I can get you for somethin'."—Washington Star.

This country will bear its war tax burden with a cheerfulness in proportion to the good sense and fairness made use of in allotting it.

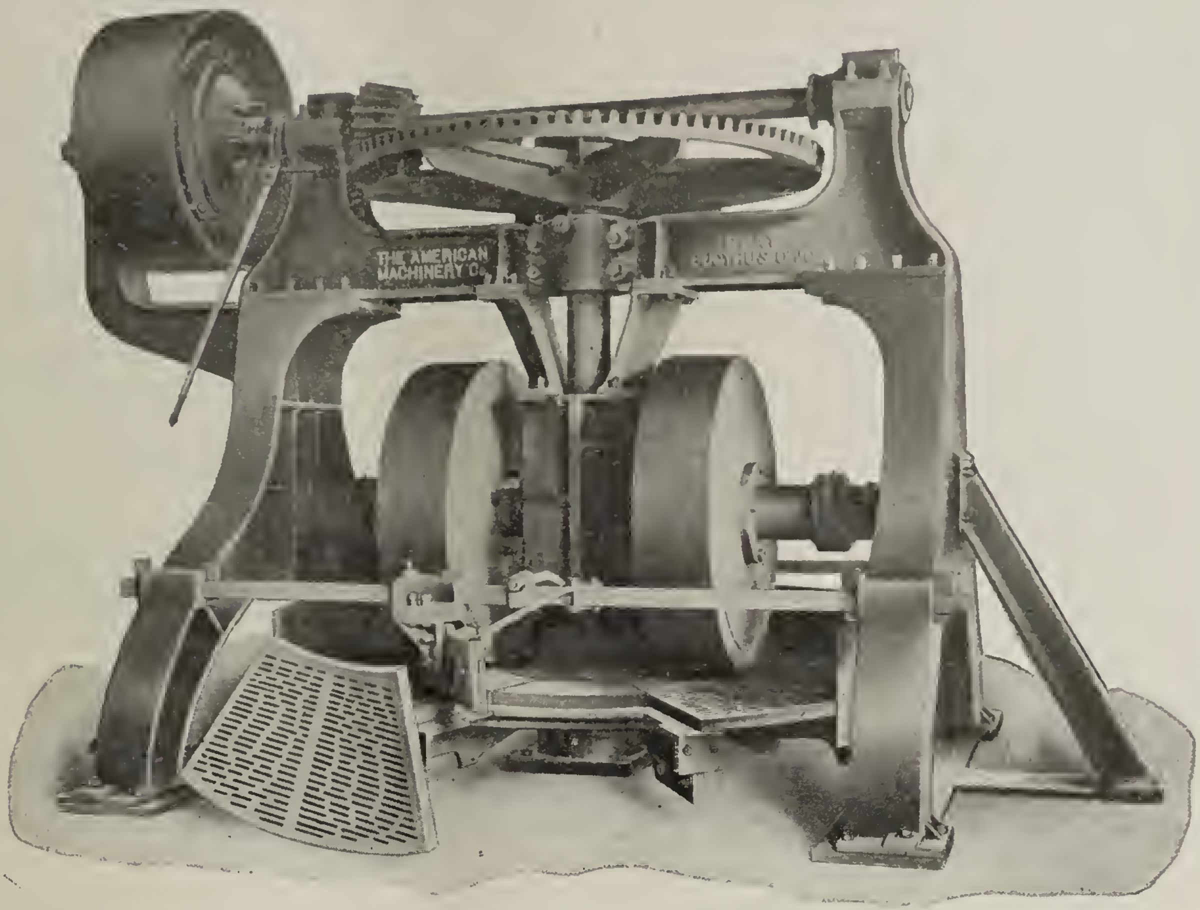
"Work or fight," says General Crowder, and some of the states have gone him one better with drastic vagrancy laws covering all men from 18 to 60.

This ought to be a great year for the sale of labor-saving devices for the office as well as for the plant, because in addition to the man power called from the office into the ranks there is an outside industrial need that calls for a reduction of the office force to the smallest minimum.

FOR SALE.
A five-kiln tile plant, located in the best agricultural district in southeastern Indiana. The plant is well equipped, modern and up to date. Address,
TILE PLANT,
6 tf d Care Clay-Worker.

YOU HAVE KNOWN FOR YEARS THAT
RICKETSON'S MORTAR COLORS
are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.
Why Not Insist on Having Them?
They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.
Red, Brown, Buff, Purple and Black.
RICKETSON MINERAL PAINT WORKS
MILWAUKEE, WIS.

AMERICAN PANS.



AMERICAN No. 57 9 Ft. DRY PAN FOR HEAVY DUTY

The "Get There" quality is in every American Pan.

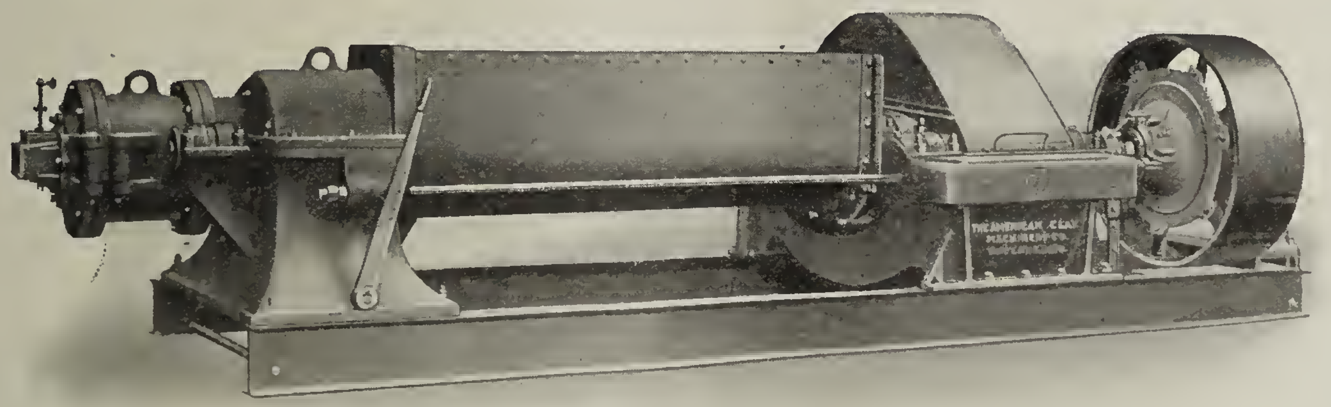
Their design and method of manufacture equips them for large production and small power consumption.

Give American Pans ordinary care and their life and productiveness are almost beyond belief.

The big makers of Clay Products use and approve American Pans and we will be pleased to send you the fullest information regarding them and their fitness to assist you in profitable manufacturing of Clay Products. Ask for our Pan Bulletin.

THE AMERICAN NO. 280 COMBINED MACHINE.

The No. 280 American Combined Machine is the most successful machine of this type on the market. Its good qualities of design and construction insure its successful operation. We have a bulletin describing this machine which we will be pleased to send upon application.



AMERICAN No. 280 COMBINED AUGER MACHINE
AND PUG MILL

The American Clay Machinery Co.

Bucyrus, Ohio

Lick a Few War Stamps Just to Get into the Licking Mood.

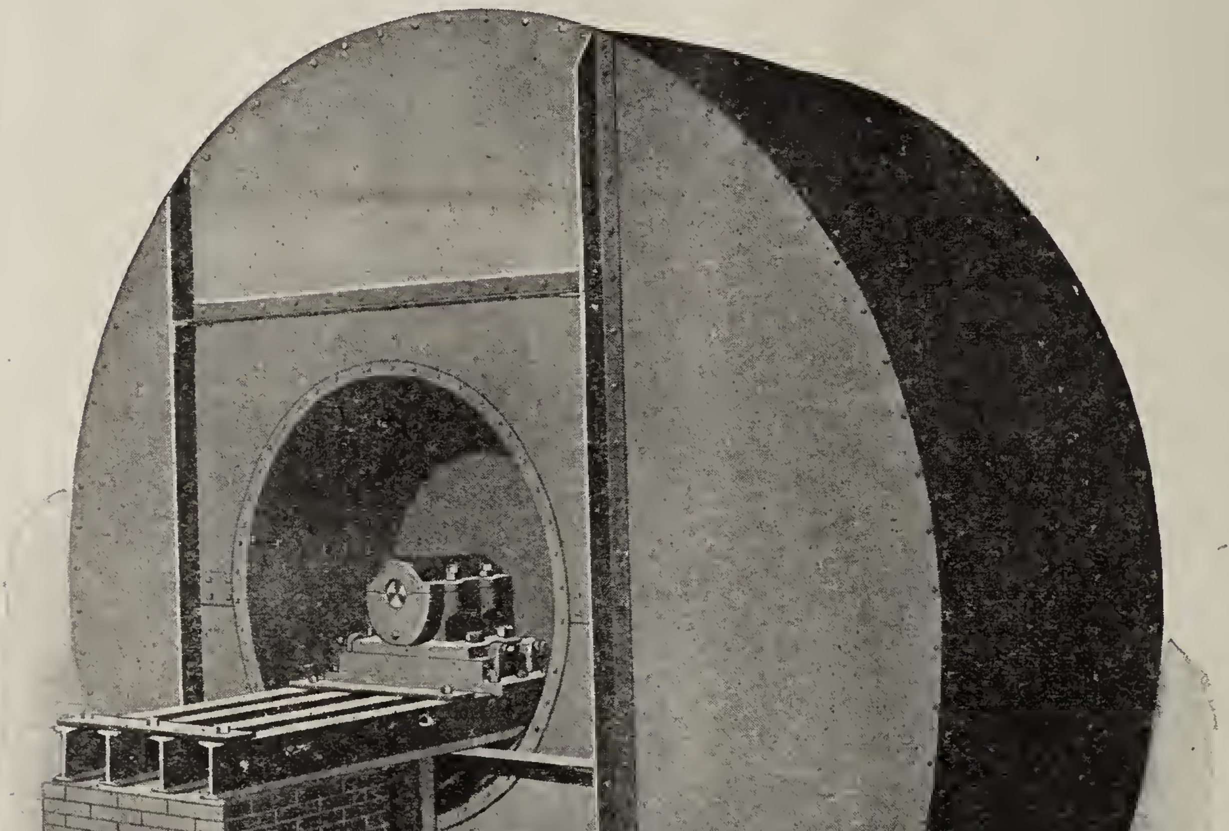
HAIGH CONTINUOUS KILN.

With thef uel shortage the saving qualities of the Haigh Kiln ought to interest all Clayworkers but aside from the Fuel Saving possibilities of the Haigh Kiln you ought to be interested in its ability to make money for you and to make better ware.

We have two interesting books on the Haigh Kiln and will be pleased to figure the saving that can be effected on your plant.

WASTE HEAT DRYERS--AMERICAN TYPE.

In connection with the Haigh Kiln and other kilns we can install a Waste Heat Dryer that will effect a big saving in your drying. It costs nothing to ascertain what we can do toward increasing your profits by installing a Waste Heat Dryer. Its time right now to get your plant in condition for operation at the top notch of its capacity when government restrictions are removed.

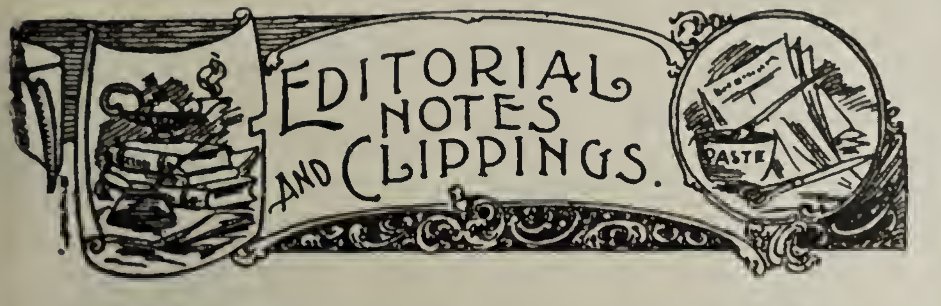


Correspondence solicited.

THE AMERICAN CLAY MCH'Y COMPANY.

BUCYRUS, OHIO.

A LICKED THRIFT STAMP IS ONE WALLOP TOWARD A LICKED KAISER



EDITORIAL NOTES AND CLIPPINGS.

The Lockwood Tile & Clay Product Company, of Warren, has increased its capital stock from $10,000 to $20,000.

The Sharon Clay Products Company, of Sharon, Ohio, has filed a certificate increasing its capital stock from $30,000 to $100,000.

The Whelan Clay Company, of Youngstown, Ohio, has been incorporated by John C. Whelan, S. S. Conroy, M. Seafers, B. M. Hobson and others.

The United Brick and Tile Corporation, of Elgin, Texas, has been incorporated by S. F. Kirksey, Jr., and H. R. Burt. The company is capitalized at $175,000.

George B. Waite, for over thirty years foreman of the Dickover & Sons' brick plant at Parsons, Pa., has been appointed manager of the Diamond City Brick Company.

William Bain, an employe of the Suburban Brick Company at Moundsville, W. Va., was caught in the brick machinery and had an arm broken before he could extricate himself.

The Fairmount Brick and Tile Company writes that the plant is now completed and the office of the company has been moved from Eugene to Monroe, Ore., where the plant is located.

Hiram C. Blair, one of the oldest brick manufacturers of the Hudson river district, died at his home in Haverstraw, N. Y., in his seventy-third year. He was associated with the firm of J. F. Washburn & Co.

The Mexia Company's plant at Mexia, Texas, was destroyed by fire June 24. No insurance was carried. The plant was owned by P. E. Miller, of Fort Worth, Texas, who states that it will be rebuilt without delay.

The Denver Fire Clay Company, of Denver, Colo., has been incorporated with $500,000 capital stock by Arthur H. and Harold O. Bosworth and J. C. Evans. The company will manufacture clay wares of various kinds.

At the annual meeting of the directors of the Ostrander Fire Brick Company, Troy, N. Y., the following officers were elected: F. W. Ostrander, president; J. W. F. Podmore, treasurer, and R. Rynders, Jr., secretary.

R. H. Howe, a brick manufacturer of New Brighton, Pa., recently tendered his brick plant to the government for the period of the war, without remuneration. Mr. Howe's generous offer has been referred to the War Industries Board.

C. L. Bundy and John H. Schall, of Philadelphia, Pa., and William C. Brister, of Ambler, Pa., are the incorporators of the Diamond State Clay Products Company, which was recently incorporated under the Delaware laws and capitalized at $100,000.

The International Clay Machinery Company, of Dayton, O., is holding its own these days, and the officers of the company are fairly well pleased with business. The company recently installed two complete large plants in Cuba, including gas-fired continuous kilns in each instance.

The Carlinville Clay Company, Carlinville, Ill., owing to the fact that the government has limited them to the amount of coal they may use during the year, has suspended operations until next September, when they expect to open up again. They have thus released a number of men, who have taken up work on the farms and in other vocations.

The Portsmouth Refractories Co., Portsmouth, Ohio, has brought suit against the Harbison-Walker Refractories Company to establish the rights to a tract of fire clay. The amount claimed is $150,000.

Aaron S. Swartz has been appointed receiver for the Montgomery Shale Brick Company, of West Point, Pa., under a bond of $2,000.

The Greenpoint Fire Brick Company, of Brooklyn, N. Y., has purchased a site in Long Island City, N. Y., on which they will erect a fire brick plant.

A. B. Hunter and H. B. Hartswick, of Clearfield, Pa., will make application the latter part of July for a charter for the Fulton Clay Products Company.

C. A. Clemens, sales manager of the Cannelton Sewer Pipe Company, Cannelton, Ohio, has resigned his position to enter the military service, having enlisted the latter part of June.

The plant of the Oregon Brick & Tile Company, of Beaverton, Ore., which had not been operated for some little time, started up again the latter part of June. The company has a goodly number of orders on its books.

Notwithstanding the disturbed conditions of the times, the Purington Paving Brick Company, Galesburg, Ill., is enjoying a good business, and it is understood that there is a possibility of the company getting an order from the Government for at least a part of the brick needed for the large additions contemplated to the Government works at Rock Island.

Alien owned property valued at millions of dollars will be put on the market at a series of public sales now being arranged by government officials. The first sale, it is announced, will be that of the Orenstein-Arthur Koppel Company property, which is located at Koppel, Pa. This company, which has offices in Pittsburg, and a large lumber concern, are the only German corporations in this country which have never been incorporated in the United States.

The Pueblo Clay Products Company, with works at Stone City and offices at Pueblo, Colo., has had a most successful season. The calcine clay product of the plant is now being shipped to various zinc plants in Kansas, the oil fields in Oklahoma, the U. S. zinc plant in Pueblo, and a number of other sections in the western state. About one hundred men are employed, which means much to that county. W. B. Thomas is president and manager of the company, and Robert Rapalje is treasurer of the company.

Clay deposits, said to be as fine as any in the country, have been found by Dr. Heinrich Reis, of Cornell University, in Tallahatchie county, Mississippi. The clay is useful for a multitude of war purposes, and it is expected that the extensive fields will be developed as soon as the report of the expert is made public from Washington. Clay of the sort located by Dr. Reis was formerly imported from Germany in large quantities, and there has been a shortage in the material since the war began. Large clay fields exist in several of the northern Mississippi counties, and it has been known for many years that a good quality of potter's clay was to be had there. A detailed report of Dr. Reis' findings is expected to be made public here shortly by the Mississippi State Geological Survey.

The plant of the Sioux City Brick and Tile Company, Sioux City, Iowa, located at Sergeant Bluff, was completely destroyed by fire July 3, causing a loss of approximately $200,000. About one-fourth of the loss was covered by insurance. The yard had not been in operation for some time, owing to the shortage of coal, and the blaze had gained considerable headway before it was discovered. Spontaneous combustion in a pile of coal in the boiler room is thought to have started the blaze. Efforts of the fire fighters were directed toward saving the west yard from the flames. Directly after the fire alarm had been sounded a bucket brigade of volunteer firemen was formed and succeeded in saving several buildings between the two yards and in keeping the flames from spreading. They were hampered in their work by a shortage of water. Because of the headway which the fire had gained before being discovered, efforts to save the east yard were useless.

L. T. Thresh, of Key West, Fla., is promoting a plant for the manufacture of sand-lime brick.

C. J. Harris, D. R. Harris and S. W. Enloe, of Dillsboro, N. C., have incorporated the Harris Kaolin Co., with a capital stock of $400,000.

The office of the Brick Sales Company, Cincinnati, has been moved fro mthe St. Paul building to the company's warehouse at Third and Hammond streets.

N. D. W. Stevens, T. L. Wallman and H. S. Primrose have incorporated the Stevens Brick Co., of Newbern, N. C. The company is capitalized at $30,000.

The Bridgeton Brick Company, Bridgeton, N. J., with authorized capital stock of $100,000, has been incorporated, with Benjamin Erickson as president, John Sayre, Cape May Court House, as Secretary, and Edward J. Barnes as treasurer. The new concern has purchased the brick plant and property of the Ridgeley Company, which recently went bankrupt.

The stockholders of the Burns Fire Brick Company and The Scootac Mining Company, Williamsport, Pa., have decided on a merger of the two concerns, the organization to be hereafter known as The Scootac Mining Company. The officers of the new concern are: President, C. LaRue Munson; vice-president, N. B. Bubb; secretary, Charles G. Burk; treasurer, W. R. Kramer.

Claymont, Del., is to have a large building brick plant the product of which is to be used for the building of houses for government workers in that vicinity. Work is being rushed on the plant as rapidly as possible. The first bricks turned out will be used for the building of several hundred homes for the employes of the General Chemical Co. It is understood the brickyard owners have standing orders for the entire output of bricks for the next eighteen months.

The Hicks Clay Products Company, of Springfield, Ill., has been incorporated with $150,000 capital stock. A plant will at once be erected at an approximate cost of $75,000. Those interested in the enterprise are Charles T. Hicks, Drake, Ill.; Walter C. Holmes, Springfield; Edward C. Pearce, White Hall, and J. C. McGrath, of Jerseyville, Ill. Mr. Holmes, the president of the new company, is also manager of the Springfield Drain Tile Company, and Mr. Pearce, the secretary, was formerly connected with fire brick manufactory.

An involuntary petition in bankruptcy was filed Monday afternoon in the United States District Court against the Ajax Clay Works, of Macon, by the Interstate Clay Products Company, of Cleveland, Ohio, the Bibb Brick Company and others. Receivers were named by Judge Emory Speer, and they will operate the plant as a going concern. The receivers are R. E. Findlay, general manager of the plant, and R. C. Hazelhurst. The plant of the Ajax Clay Works was erected two or three years ago and is valued at $100,000. It is believed that under the receivers the financial difficulties of the concern will be adjusted satisfactorily, and it will not be necessary for the plant to suspend.

The board of administration of the state of Ohio will purchase outright the plant of the Junction City Clay Products Company, which has been operated for the past five years by state prisoners. The state has been paying an annual rental of $5,000 for the property, but when the lease was made the right to purchase any time within five years, the property for $60,000, was secured. This option expires within a few months, and the board is anxious to become the owner of the property, which, it is claimed, contains enough shale to last the state almost one hundred years, at the present rate of production. Eighty-five prisoners are now working there, and brick are being sold as fast as manufactured. The board of control will have to approve the sale before it can be made. A number of extensive improvements are planned just as soon as the state comes into possession of the property.

An inquiry is being made by the government for a red brick labeled "W. K. S." Anyone having any information relative to this particular brand of brick will kindly communicate with The Clay-Worker.

J. Wilfred Gaidry, 2300 Calhoun St., New Orleans, La., wants prices and information relation to machinery, second-hand preferred, and kilns for the establishment of a plant for manufacturing clay tiles.

The Latrobe Brick Co. has sold its plant at Latrobe, Pa., to the Greensburg Coal Company, Greensburg, Pa. The Latrobe Company has another plant in an adjoining county which it will continue to operate.

The United Brick & Tile Corporation, Elgin, Texas, has been incorporated with a capital stock of $100,000 and will construct a plant. The incorporators are S. F. Kirksy, Jr., S. M. Kirksy and H. R. Burt.

The Metropolitan Paving Brick Company of Canton, Ohio, has drawn the fires from the large addition erected at its Bessemer, Pa. plant, and shut down one brick machine to meet with the Government order to reduce its production 50 per cent.

Benjamin Reese, one of the original partners of Reese, Hammond & Co., fire brick manufacturers of Bolivar, Pa., died at his home in Bolivar recently. Mr. Reese was eighty years old and had not been actively engaged in the business for a number of years.

The Delaware Terra Cotta Company and James B. Oberly of Wilmington, Dela., recently received orders that will take all of the output of the two plants for more than two months. The brick are to be used by the Lynch Construction Company for the Union Park Gardens housing projects which will require about 12,000,000 brick.

The plant of the Alton Brick Company, Alton, Ill., having used its allotment of coal will not be operated any more during this year. 'Eb Rodgers, the genial manager of the company, says he is willing to abide by the Government ruling and do his share toward helping win the war. Mr. Rodgers was a caller at the Clay-Worker office recently en route from Camp Sherman, Chillicothe, Ohio, where he and his family had motored to spend a few days with Mrs. Rodgers' brother, before he left for France.

Edward W. Washburn, professor of ceramic chemistry of the Illinois State University, Urbana, Ill., writes us that he is established in Washington for the summer, acting as secretary of the Division of Chemistry and Chemical Technology of the National Research Council, devoting most of his time to the organization of research work on war problems at educational institutions. He will also handle the work of the Committee on Ceramic Chemistry from his Washington office, 1023 Sixteenth street.

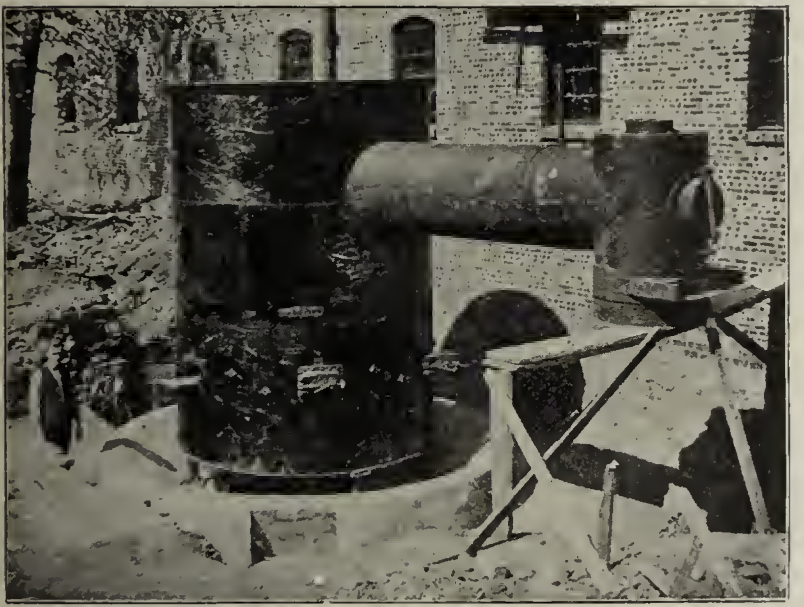
The Refractory Chemical Company is the name of a new organization, with general offices at Forbes and Boyd streets, Pittsburgh, Pa. Officers of the company are: John R. Hermes, president; J. W. Kunzler, vice-president and manager; W. W. Lapham, secretary-treasurer. It is stated that the company will specialize in chemically treated fire clay for furnace building. Mr. Kunzler is widely known among refractory manufacturers. For many years he was in the employ of a south side glass manufacturing organization, in its clay pot department. After leaving the south side he was for a time manager of the factory of the Beaver Valley Pot Company at Rochester, Pa., and thereafter was with the Pittsburgh Clay Pot Company. For several years he has not been active in the clay industry, having taken up promoting and experimental work.

25% SAVING

and usually more

In Coal and in Labor

Construction of two
International Producers



Construction 1-7 ft.
Producer for Pottery Kiln

Will be made by
the application of

PRODUCER GAS

to your Kilns

Whether you burn
Brick, Tile or Pottery

INTERNATIONAL PRODUCERS

and forced Draft

BURNERS

can be adapted to your Kilns

Remember your coal troubles last winter

Write us today

International Clay Machinery Co.

DAYTON, OHIO

Written for The Clay-Worker.

NEWS FROM EVANSVILLE AND SOUTHERN INDIANA.

THERE is not much doing with the brick and clay manufacturers of Evansville and other southern Indiana towns at the present time and things have been rather dull all summer compared to other summers. Manufacturers express the belief that there will be change for the better during the balance of the summer. John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., stated the other day that his company now has two teams hauling brick from their largest plants where in ordinary summer times they have twenty or more teams. The company's new plant has not been operated any this summer and indications are that it will remain closed down for some months to come. Building operations in Evansville are dull and the permits are less than one-fourth what they generally are at this time of the season. But in spite of the fact that most of the brick manufacturers of southern Indiana are running on short time they report that the labor shortage is affecting them quite seriously and they see no relief in sight, as many more of the young men of draft age are to be sent away from the city this year. Some of the brick plants are employing boys in the place of men and they are paid unusually high wages and the work is not always satisfactory. Manufacturers say that they see little of an encouraging nature in the trade line in the immediate future, but that "they are living in hopes of better times." Secretary Andres, said that government works at Nashville and Louisville may help the brick manufacturers in southern Indiana and Western Kentucky, as it is expected those sections will be called upon for brick this summer. The fact that the Federal Government is going to distribute war contracts all over the country instead of having the bulk of the work done in the east is also a favorable sign, the brick manufacturers point out.

George Clement of Chrisney, wno was given the contract several months ago for the building of the new high and grade school at Lynville, Ind., at a cost of over $40,000, stated the other day that owing to the fact that he was having a hard time to get materials, that he will be unable to build the school this year as he had planned.

Colonel William Howell of Hopkinsville, Ky., one of the vice-presidents of the Dixie Bee Line Asociation, that is building an improved highway from Danville, Ill. to Adams, Tenn., where it will connect with the Dixie Highway, while in Evansville a few days ago, announced that the new highway from Hopkinsville to Adams has been completed and it will be inspected in a few days. Mayor Benjamin Bosse of Evansville, who is the president of the Dixie Bee Line Association, and other officials will take part in the inspection trip.

The manufacturers of thirteen counties in southern Indiana and twenty-five counties in western and northern Kentucky, met in Evansville on June 28, and formed the Evansville subdivision of the Cincinnati regional on war contracts and the new organization will look after war contracts in this immediate section. The value of the manufacturing plants in the Evansville territory represented at the meeting was more than $40,000,000. Many brick and clay manufacturers attended the meeting and took a leading part in its deliberations. Henry C. Kleymeyer, president of the Standard Brick Manufacturing Co. of Evansville, was made permanent chairman of the group of clay products and Aaron M. Weil, president of the Crown Pottery Co., was made chairman of the sanitary and decorative group. Henry M. Clemens of the Cannelton Sewer Pipe Co., of Cannelton, Ind., was also a leading spirit in the meeting and took part in perfecting the permanent organization. He made a telling speech before the convention.

A few days ago the Cannelton Telephone, published at Cannelton, Ind., issued a Soldiers' Souvenir Edition and a copy of this paper will be sent to every soldier and sailor in the service who enlisted from Perry county. This was made possible through the enterprising business and manufacturing firms of Cannelton, among them being the Cannelton Sewer Pipe Co., the Cannelton Clay Products Co. and the Clark Bros. Pottery. All these well known concerns have a large number of their employes in the service of Uncle Sam just now, and more will go.

Considering these are war times, business with the Clay Products Co., of Cannelton, Ind., has been very good this summer. This well known concern was organized in November, 1916, with a capital stock of $20,000 and later this was increased to $30,000. The officers of the company are as follows: President, Lee Rodman; vice-president, M. F. Casper; secretary-treasurer and general manager, L. J. Brenner. This company started with two small kilns, to which were added larger ones in the spring of 1917. Another kiln that is now nearing completion, will bring the total capacity of the concern up to 17,000 brick a day. The trade of the company extends from the Great Lakes to the Gulf and from Cincinnati on the east to Kansas City on the west and the business is expanding steadily.

Business with the Crown Pottery Co. at Evansville, has been very good all summer and the plant is being operated steadily. Dinner sets are the main products of this company and these are made in many designs and find a market in many parts of the United States. The concern is one of the best known in Evansville and southern Indiana.

G. C. Landgreve, manager of the Huntingburg Pressed Brick Works of Huntingburg, Ind., was in Chicago recently attending the convention of the Indiana and Illinois division of the American Face Brick Manufacturers' Association.

It is announced that the Southern Indiana Clay Products Co., of Huntingburg, Ind., has just paid nice annual dividends to the stockholders and the business of the concern is reported to be growing splendidly. The concern is one of the most enterprising and progressive in southern Indiana.

A HOOSIER.

As an urge to improvement in the power plant and at the kilns the fuel administration has promised to be more liberal in allowing fuel supplies to those plants which are most efficient in its use.

There will be a great problem ahead in the readjustment of our industrial affairs when the great turmoil is over, and it is well enough to be thinking some of this from time to time, but let us not for one moment overlook the fact that the first and most important duty before us is to win the war, and to win it so thoroughly and decisively that when it is through we can put the matter of warfare behind us and feel assured of peace for a generation at least.

NO. 1
KNOWN
THE WORLD OVER
SCHURS
OIL BURNER CO.
Los Angeles, Cal.

NOTICE!
TO
BRICK MFRS.
FOR
QUICK BURNS
AND
BETTER COLOR
BURN OIL
AND USE
SCHURS
BURNERS

WARNING

During a period of four to five years past, we have spent our time, effort and much money in developing for the ceramic industry and other lines, the Underwood Producer Gas Burning System, and bringing in its use with the various plants so established, an unbounded success for the user in the manner we are representing. As a result, it now appears that some of those who until lately out constantly condemned the system as valueless, a failure, etc., are the very ones trying to reap the benefits of the other fellow's efforts by coming out in a similar way, which any one will agree, if such procedure involves infringement of our patents, is not fair between man and man.

We therefore desire to inform all members of the ceramic industry in a general way, and others that are now, or may later become interested, that in protecting the interests of all, we have secured through the Federal Government of the United States, a number of basic patent rights, with further applications pending, to act as a safeguard for those contracting, installing and using the system, as well as those interested in furthering the movement for humanity. It is only natural therefore, that any individual or concern attempting to infringe upon such rights, be prosecuted to the fullest extent, which necessitates asking any or all to investigate carefully and satisfy themselves fully before entering into contracts with others for the application and use of any other producer gas system with periodic kilns, whether updraft, round or rectangular downdraft, or muffle kilns.

Patent rights referred to are broad and substantial, and to maintain the interests of all concerned as stated, it is necessary that we protect them to the fullest extent within our power, and which we propose to do.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-Working Machinery.

PERRY & DUKE,
Canadian Representatives,
841 College St.,
Toronto, Ont., Canada.

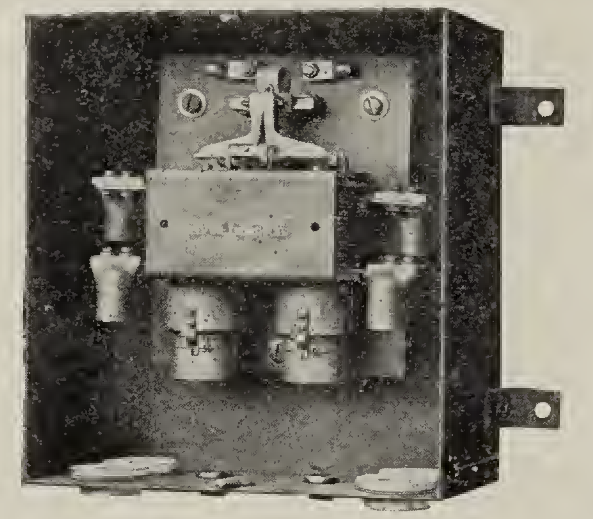
A SAFETY FIRST RELAY.

WAR TIME conditions demand that the utmost care be taken of both machines and men, in the factory and shop. The Safety First Relay, manufactured by the Westinghouse Electric & Mfg. Company, provides a neat, safe and efficient method of supplying overload protection for alternating-current applications equipped with starters or switches having low-voltage protection.

The relay is enclosed in a sheet steel case which excludes dust and foreign particles of all kinds. The cover of this case is secured by two thumb-screws and is provided with a safety device which automatically trips the relay when the cover is removed, thus rendering all parts of the relay "dead" as long as the cover remains off, so that inspection or repairs can be made without danger.

This case is arranged for wall-mounting in any convenient place near the switching equipment.

The relay operates by means of magnet coils, which are inactive at loads less than that for which they are set. When the current value reaches or exceeds this setting, the coils lift plungers which break the control circuit and operate the low-voltage relay to open the line circuit. With no current flowing in the line, the coils are de-energized and the relay is automatically reset, the bridge being pressed against the contacts by means of a compression spring.


Overload Relay with Cover Removed.

The plungers operate in oil dash-pots, providing a time element which allows the relay to carry a momentary overload without tripping.

This time limit is adjustable by means of a small perforated disc in the dash-pot, which is readily accessible by unscrewing the dash-pot from the casting which holds it. Turning the disc so that more perforations are uncovered lessens the time of the momentary overload; with fewer perforations, the time element is increased.

These relays will operate over a wide range of current values, for which adjustments can readily be made by lowering or raising the dash-pot. This is marked with a scale, and an indicator clearly shows the tripping value.

To prevent accidental change of adjustment from vibration or jar, a spring lock is provided which holds the dash-pot firmly.

The relay is mounted on a base which completely insulates it from the case, within which all connections are made. This case can be arranged for either open or conduit wiring.

The safety device by which the relay is tripped on removal of the cover is a flat looped spring which when free to act holds the contact bridge away from the contacts. When the cover is fastened in place, this spring is depressed by a pin on the cover, thus allowing the contact to be made between contacts and bridge.

These relays are made in all commercial frequencies and voltages, and in capacities of 5 to 300 amperes.

COAL

CLAYWORKERS!
ATTENTION!!

Your industry is largely in the non-essential class, it uses a large tonnage of coal, and it is badly handicapped by the Government restrictions.

Why not get in an essential industry—the most essential of all. You have the equipment, now idle or it soon will be. Put it at work digging coal.

Coal mining is very profitable, and the most profitable method is by stripping where conditions are suitable. Such situations are very limited and there is not room for all but greater profit for a few.

We have two large tracts of high grade coal, ideal for stripping operations, in the heart of the Ohio coal field. Let us tell you about them.

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FUEL--LABOR--TIME

BY INSTALLING THE

"MINTER SYSTEM."

THE APPLICATION OF CONTINUOUS BURNING TO ROUND DOWN-DRAFT KILNS.

This New Application has been in actual operation for over a year in our Plant, with the result that its efficiency and pracitability has been established beyond all experimentation.

IT SAVES MONEY by reducing labor, fuel, time and expense in burning, and in producing a product which is more evenly and perfectly burned.

"THE MINTER SYSTEM" may be installed at comparatively small cost on Round Down-Draft Kilns already built, but when installed in New Construction "THE MINTER SYSTEM" results in a material reduction of building cost, on account of the fewer number of kilns required for desired output.

WRITE US FOR FULL DETAILS.

--PATENT GRANTED--

FLINT RIVER BRICK CO.,

Albany, Ga.

BURNING CLAY WARES.

(Continued from page 33.)

erations a dead wall is set in the center of the arch to insure independent control of each furnace. To get independent control of the center and heads, we have seen furnaces constructed as shown in Fig. 48. There are two throats, one direct into the arch and one into a flue under the arch floor with an inlet six or more feet from the kiln wall. These throats may be plugged with loose bricks as the condition of the kiln requires.

Another method of getting the heat distributed throughout the arch, in common use in some sections, is a long grate bar extending ten or more feet into the arch on each side as shown in plan in Fig. 49, each grate of the same length, or alternate long and short grates, as shown in Fig. 50. A longitudinal section of such grates is shown in Fig. 51. The grates are straight, flat bars, full length, and set on edge, or short sections of cast gridiron grates. The long bars are supported by notched bearing bars, as shown in Fig. 52, which span the ash pit and are spaced about three feet apart. The ash pits must be kept clean, otherwise the bars and supports will quickly burn off. This is done with a long-handled swivel scoop, as shown in Fig. 53.

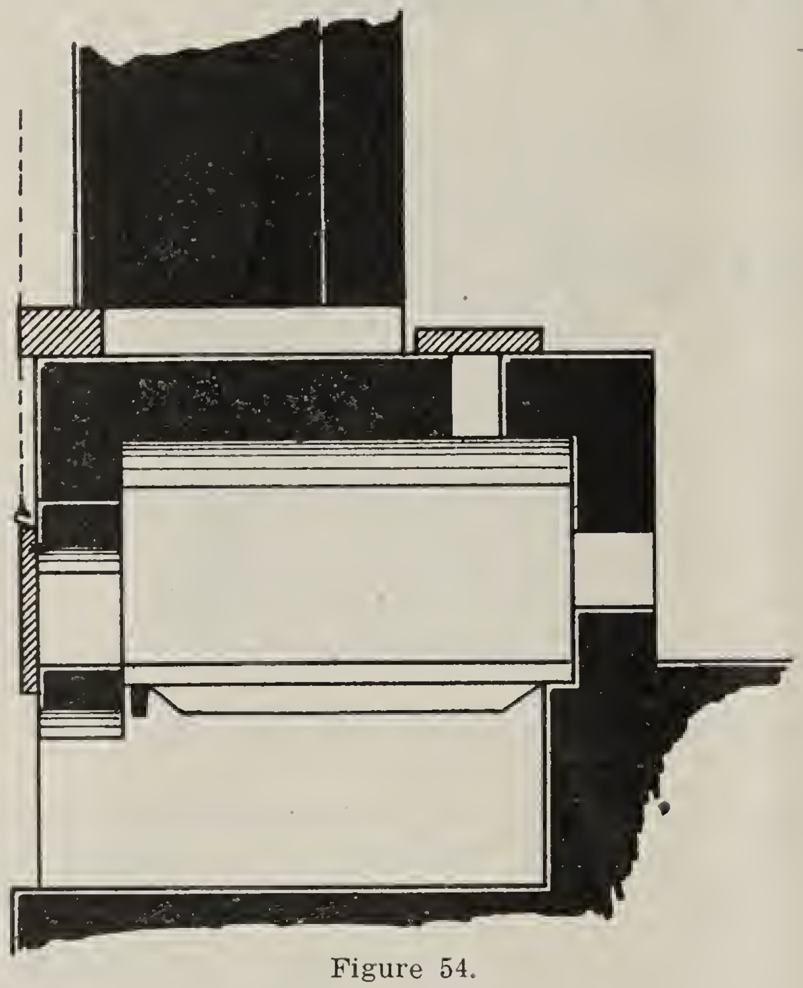


Figure 54.

Kilns have been constructed with the furnaces projecting into the kiln as shown in Fig. 54, and one design has an opening in the top of the furnace arch, as shown, besides the regular throat into the kiln arch. This type of furnace, without the top opening, found some use in Pennsylvania with anthracite coal for fuel.

The heat conducted through the furnace crown aided in bringing up the heads and keeping them in advance of the center, which is important, but the objection is the bad setting in consequence of the permanent non-settling bench supporting part of the mass of bricks.

A crude pit furnace shown in Fig. 55 is used in one or two installations and is said to give excellent results, but that it should do so is almost inconceivable.

Natural gas, oil and producer gas are readily applied to up-draft kiln-firing, as one can see. The pressure behind such fuel serves to drive the gases to the center and thus get heat throughout the arch.

Mr. J. D. Pratt, in a paper before the Wisconsin Clay Manufacturers' Association, gave brief instructions for firing an up-draft kiln, from which we take the following excerpts:

"We use double platting put on in checker-board fashion, and raise every fourth brick, start wood fires in the ash pit with the ash pit wide open and the furnace doors closed, and continue this firing until the kiln has a good draft, then raise the fires onto the grates. Fire with smokeless coal, with ash pits and furnace doors wide open. After the kiln is dry, commence to heat up with the coal regularly used in burning. Increase the heat gradually, keeping the ash pits open and the furnace doors closed, except about an inch for air and overdraft. If the center is hard to get, set it more open. After the kiln is hot all over the top, and the platting down, commence the hot firing. It is important to admit the proper amount of air and no more, and this is what the burner has to look after. Keep the grates and ash pits clean so the fire shows bright in the ash pits. Keep the furnace door open three-quarters of an inch to one inch. Keep the grates covered with not more than three to four inches of coal, and fire light and often. Clinker with the furnace hot every six hours, and oftener if necessary. Never open the door to drive the heat to the center. Keep the furnaces as hot as the arches will stand and keep even fires.

give the operation careful attention, keep the fires in good

Summarized, Mr. Pratt's instructions are: Use judgment, condition and at their maximum efficiency, and go slow. The summary will apply to any firing, but the specific directions do not apply.

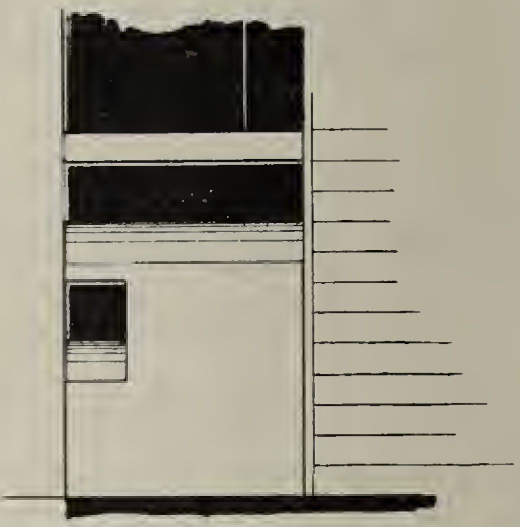


Figure 55.

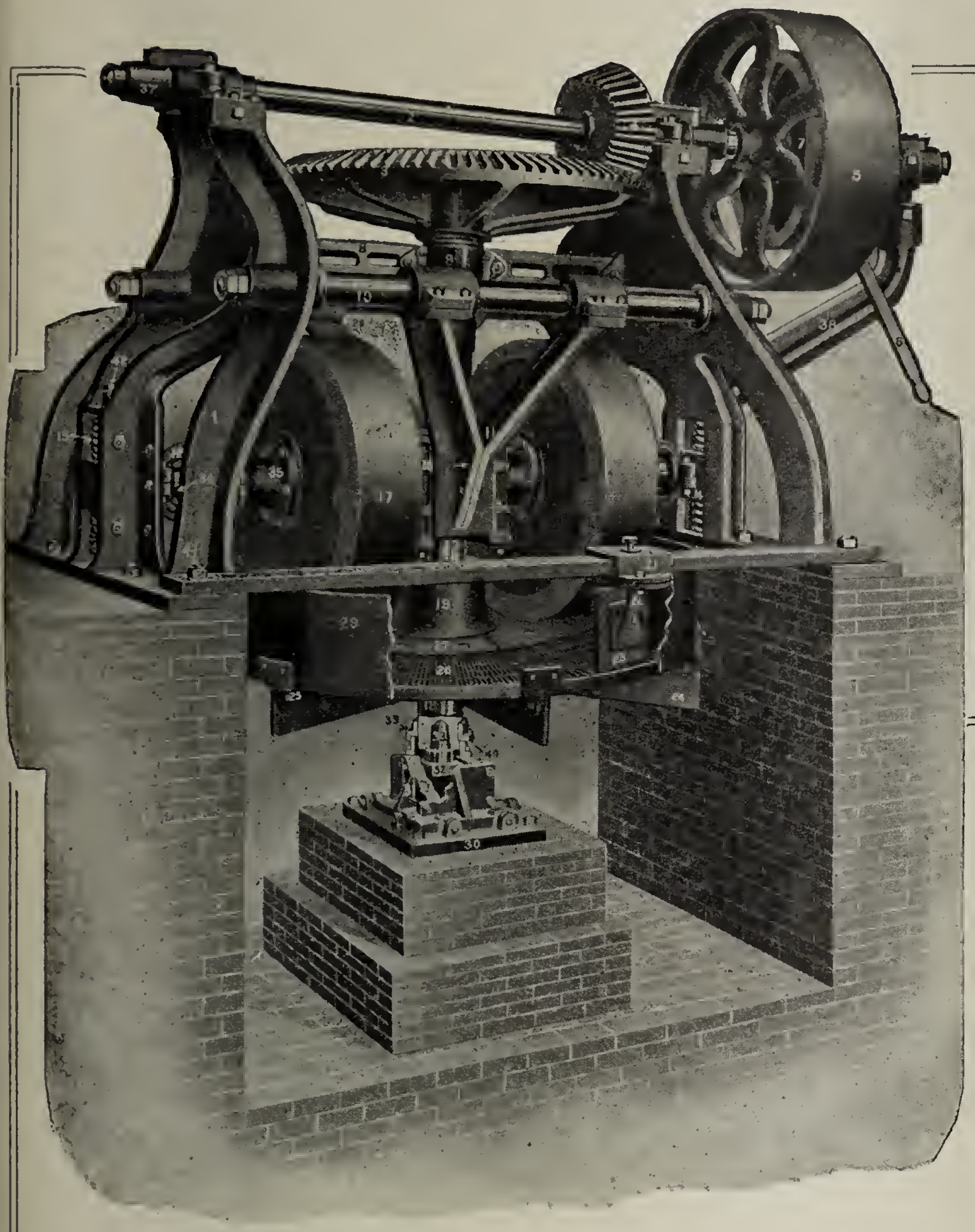
In the Hudson river district it is common practice to "follow up the watersmoking"—in other words, do not wait until the steam is off before raising the heat, but to drive the heat to the maximum temperature under the steam. Such practice would ruin the product in many districts.

One operation uses very heavy firing at comparatively long intervals. The effect is distillation of a large volume of gas following the firing, which is carried into the kiln and burned in contact with the ware to whatever extent it is possible to get the necessary oxygen. Some oxygen will come through the furnaces with the gas, some from leakage through the walls, and some from reduction of the minerals in the clay. As the fires burn down the temperature advances, then becomes stationary as the air excess increases, resulting in oxidation. The result of this reduction, smoking, heating, oxidizing process, is a chocolate colored product, and the burns are quite uniform and hard throughout the kiln, without an excessive fuel consumption. Such firing, however, would ruin the arch bricks made from other clays, and with the arches down the product above them could not be satisfactorily burned.

Firing is a problem of the clay as well as the fuel, and unless one has specific knowledge of both, he cannot give de-

(Continued on page 82.)

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

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They are "show you's" of the esteem in which the belting authorities of the world hold the GANDY Stitched Cotton Duck Belt.

They have come to us, and we prize them for what they stand—the merit of the GANDY product.

But the greatest satisfaction that can ever come to the **GANDY** organization is not in the number of medals we can collect, but in the number of belting users we can serve.

The GANDY Stitched Cotton Duck Belt is waiting to give you the same 100% service it is rendering in thousands of mills, mines, machine shops and manufactories throughout the world.

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Look for the Green Edge and GANDY Trademark.

GANDY BELT
Stitched Cotton Duck

BURNING CLAY WARES.

(Continued from page 80.)

tailed directions in regard to the firing. Having determined the proper method for a particular operation, the economy in fuel and the character of the results depend upon the care and intelligence given to the work.

It may be mentioned that attention should be given to the entire kiln and not to the furnaces alone. Cold spots must be looked for and worked out, by regulation of the fires, by the use of wood or coal in the arches under the cold spot, or by freeing the draft through the platting, or checking the draft around the spot. Hot chimneys, if taken in time, may be checked by covering the platting above them with dirt, thus diverting the draft to the surrounding areas.

The speed of the burning depends largely upon the safe burning range of the clay. If the range is short, we must take a longer time to work the heat to the top, whereas with a wide range we may carry a higher temperature in the arches, resulting in rapid heat absorption throughout the kiln, since the rate of such absorption varies with the difference in temperature of ware and gases.

Coaling.

Mixing coal screenings with the clay is a common practice in several districts, and anthracite and coke are best for this purpose. Bituminous coal may not be used, at least not generally, but lignite is practical. The anthracite and coke contain very little volatile matter, and in consequence do not cause bloating. Bituminous coal is not only highly gaseous, but it burns rapidly and develops a high temperature, resulting in fusion of the particles of clay in contact with each granule of coal before the coal is fully consumed. The gas generated by distillation, or combustion, or reduction of the clay minerals, becomes entrapped in the fused mass, and its expansion under advancing temperature forms blebs, the combined effect of which causes bloating.

Lignite is used for coaling, but we do not know how generally it may be used. It is more gaseous than bituminous coal, and is rapid burning, but usually, being high in ash and moisture, it does not develop the heat that we get from bituminous coal, and unless there is fusion of the clay mass, bloating does not result. Likely, lignite could not be used in a clay which fuses at a low temperature.

Sawdust has been extensively used, but more to develop porosity than to aid in the burning. It, too, is highly gaseous, but does not cause bloating.

In England, we understand, bricks are sometimes burned by the coal mixed with the clay and setting the bricks with coal dust. The mass is cased up and ignited, and the problem would be to regulate the air admission to insure a combustion rate sufficient to develop a needed temperature, and not to exceed such temperature. It applies, to burning bricks, the principle of charcoal burning.

In this country coaling is used only as an aid, and it is supplemented by furnace firing. The amount of coal varies in different districts between 50 and 100 pounds per thousand bricks. In one district the amount used is 66 pounds per thousand bricks. Double-coaled bricks are set around the heads, over the top and in the casing, where green bricks are used to scove clamp kilns. The term "double coaling" does not mean twice the amount used in single coaling, but simply means a larger amount, which varies from several times to ten times the amount used in single coaling.

The coal is usually added to the clay in the pug mill or soak pit, but we have seen one operation where the clay is piled in the clay shed to a certain depth, then covered with the required depth of coal, followed by a second lot of clay, and the mass is then cut down and fed into the preparing machinery.

(To be continued.)

ROLLER BEARINGS.

Next to electric transmission the most marked progress in power economy through reducing the burden of friction has come from the use of ball and roller bearings. They came into use, too, almost hand in hand, and now in the general machinery world where you see electric transmission and higher speed machines you are likely to find ball and roller bearings.

At first, we thought the place for them was in light-running, high-speed machines, but with the coming of the automobile and the truck we learned that these things had a place also in slow speed and even in the carrying of heavy burdens. To what extent they will eventually enter the shale and clay crushing and pulverizing generally time alone will tell. Already the roller bearing is with us not only lightening the friction of power-driven machinery, but also easing the way for cars and trucks.

The arch enemy of ball and roller bearings is grit and corrosive acids. They depend for their efficiency upon highly polished hard surfaces, and when these are marred and cut the bearings are soon in a bad way. The importance of this fact is emphasized when we consider that gritty dust is a common element around a clayworking plant.

This fact is pointed out, not with the idea of discouraging the progress of roller bearings on trucks, cars and machines in the industry, for they are making progress and will continue to make more progress. Also we need them. Everything that will help lighten the burden of friction in moving parts may be classed among the essential needs of the industry. The idea in pointing out the gritty dust conditions and the fact that grit is an arch enemy of such bearings is to serve warning that where bearings of this kind are used, to get satisfaction and the full measure of results that should be had, care must be exercised in adjusting the housing around them to prevent dust entering.

Gritty dust, water and corrosive acids, must be kept away from ball and roller bearings. This means that you must not wash them out with water; it means that you must select greases and oils that contain no acids. Broadly speaking, animal fats must be avoided, and vegetable oils had best be left aside. Good mineral oils and greases are the things. Buy them from a responsible house with an understanding of the duties they are to perform. The general rule is to use oils, on light, high-speed drives, and greases on the slow-speed, heavier drives. Some advise adding to this a measure of graphite. If you add graphite, be sure to insist upon flake graphite, free from grit, prepared expressly for such lubrication purposes.

SPEEDING UP THE LINE SHAFT.

One of the important suggestions for saving in steel made by Mellville M. Mix, president of the Dodge Manufacturing Co., Mishawauka, Ind., at the annual meeting of machinery supply dealers, was to use higher speed line and counter shafting so as to reduce the size of the shaft and the size of the pulleys.

There has already been quite a movement in this direction among many lines of machinery users. Line shafting has been cut into short light sections and motor driven in speeds as high as 900 revolutions a minute.

The clayworking industry calls for rugged work and often requires heavy shafting and machines, and strength rather than speed will continue to be a dominant factor in clayworking, too. Meantime, however, it is well to bear in mind that in so far as practical these higher speeds and lighter shafting will not only effect a saving in metal but it also reduces the friction load and helps save power.

Some of the fine sewer pipe made at Lehigh Sewer Pipe & Tile Co., Lehigh, Iowa, with the help of Brown Pyrometers.

More pipe per pound of Coal Like Lehigh!

To hammer down fuel consumption and boost production is the job every sewer pipe and tile man and every brick man is up against today. A hard task once upon a time but an easy one now. You do just what Lehigh Sewer Pipe and Tile Co. did—let Brown Pyrometers give you a lift.

No brick manufacturer, no matter what clay ware he makes, can afford to let this pyrometer question go any longer.

Find out the coal saving Pyrometers make. Of course, choose Brown Pyrometers for they are used by probably 85% of all the plants using pyrometers today. And you can have a Brown equipment to test out in your plant absolutely free for 60 days to be returned if you are not more than pleased. Fair enough?

Write for full details to the Brown Instrument Co., Philadelphia, or one of their district offices in New York, Pittsburgh, Detroit, Chicago or St. Louis.

Brown Pyrometers

INDEX TO ADVERTISERS

Alton Brick Co. 16
American Clay Machinery Co., The 71, 72
American Process Co. 91
Anderson Foundry & Machine Works 8
Atlas Car & Mfg. Co. 104
Arbuckle & Co. 9
Baird Machinery & Mfg. Co. 104
Ball Engine Co. 11
Barber-Greene Co. 12
Barr Clay Co., The 16
Books for Clayworkers 93
Bonnot Co., The 3
Boss, John C. 84
Brewer, H. & Co. 99
Brown Instrument Co., The 83
Caldwell, H. W. & Son Co. 88
Cameron Clay Products Co. 16
Carnell, George 90
Ceramic Supply & Const. Co. 89
Chambers Brothers Co. 19
Chase Foundry & Mfg. Co. 104
Chattanooga Paint Co. 87
Chicago Brick Machinery Co. 84
Chisholm, Boyd & White Co. 6
Danville Brick Co., The 16
Dennis, F. W. 88
Dickinson, W. W. Jr. 18
Didier-March Co. 5
Drying Clay Wares 96
Dunlap Manufacturing Co. 90
Eagle Iron Works 91
Eastern Machinery Co., The 94
Engelhard, Charles 89
Fate, J. D. Co., The 102, 103
Flint River Brick Co. 79
Frost Mfg. Co., The 101
Freese, E. M. & Co. 100
Gandy Belting Co. 82
Geijsbeek Engineering Co. 91
Harrington & King Perforating Co. 4
Important Federal Laws 90
International Clay Machinery Co. 75
Kushequa Brick Co. 16
Kushequa Keramic Co. 16
Lake Shore Shale Brick Co. 16
Lakewood Engineering Co. 104
Leary Mfg. Co., W. J. 15
Lovejoy, Ellis 92
Mantel, Tile and Grate Monthly 88
Manufacturers Equipment Co., The 77
Marion Machine Foundry & Supply Co. 84
Mathews Gravity Carrier Co. 4
Mayer, C. P. 17
McAvoy Vitrified Brick Co. 16
Medal Paving Block Co. 16
Metropolitan Paving Brick Co. 16
Mittler Wire Mfg. Co. 89
Morgan, F. W. & Co. 17
Murphysboro Paving Brick Co. 17
National Paving Brick Manufacturers' Association 16
Ohio Galvanizing & Mfg. Co., The 91
Parker-Russell Mining & Mfg. Co. 87
Phillips & McLaren Co. 88
Potts, C. & A. Co. 97
Purington Paving Brick Co. 17
Ricketson's Mineral Paint Wks. 70
Roessler-Hassslacher Chemical Co., The 87
Schurs oil Burner Co. 78
Shawmut Vitrified Paving Brick Works 16
Standard Dry Kiln Co., The 20
Steele, J. C. & Sons 2
Stevenson Co., The 81
Terre Haute Vitrified Brick Co. 17
Thwing Instrument Co. 90
Tile Underdrainage 16
Toronto Foundry & Mach. Co. 89
Trautwein Dryer & Engineering Co. 13
Wallace Mfg. Co. 98
Webster & Kincaid 95
Westinghouse Elec. & Mfg. Co. 10
Williams, C. K. & Co. 87

SEE TABLE OF CONTENTS, PAGE 70.

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Use either waste heat or exhaust steam.
No live steam. No direct firing.

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Applies to all types of kilns and will save HALF in your cost of burning.

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. LXX. INDIANAPOLIS, IND., AUGUST, 1918. No. 2.

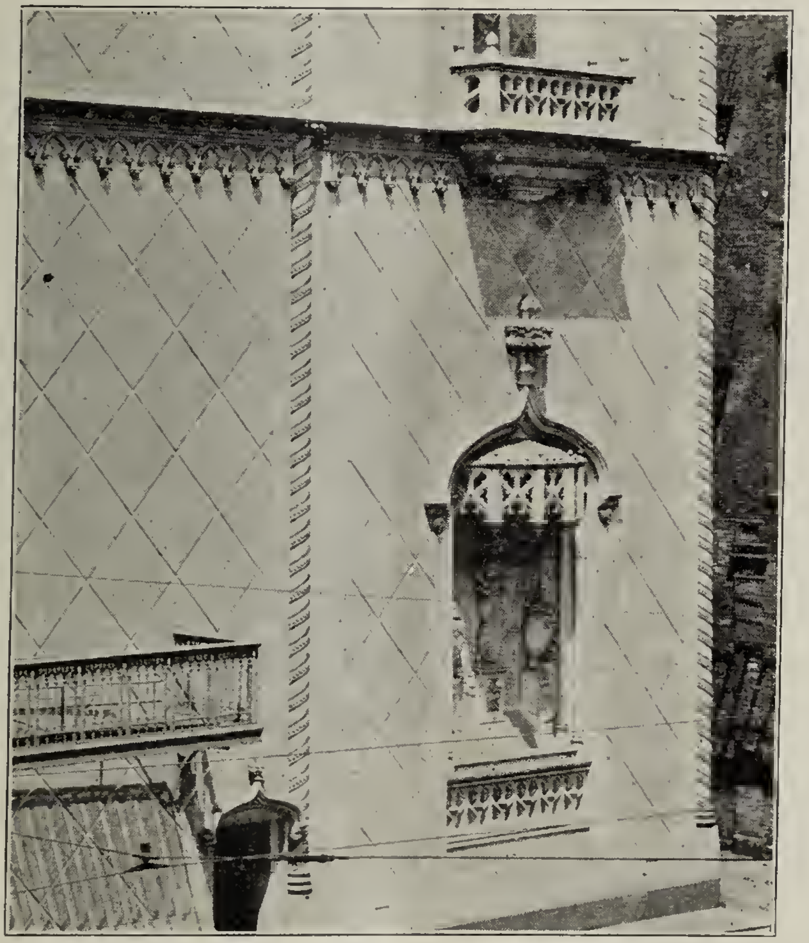
A TERRA COTTA PLAYHOUSE.

Something New in American Terra Cotta; Windows That Are not Windows.

MUCH OF THE EXTERIOR attractiveness of one of the most artistic theaters recently erected in Chicago, has been made possible through the degree of perfection to which the terra cotta art has been brought.

The new Woods Theater building, recently completed, which stands at the northwest corner of Dearborn and Randolph streets, is entirely finished on the outside in terra cotta, both body and trim. The product used was supplied from the factory of the American Terra Cotta and Ceramic Company at Terra Cotta, Illinois.

The new Woods Theater is a playhouse and ten story office building combined. The part which houses practically all of the auditorium and the stage, runs north along Dearborn street from the office section as far as the alley. The structure is characterized by those simple graceful lines to which terra cotta is so well adapted, and as every bit of terra cotta used is of enamel finish, by simple cleaning processes (in fact for some time to come by the washing of the rains alone) it will be possible to maintain the pleasing variations in shading even in spite of the Chicago soot—which in these strenuous times reminds Chicagoans daily of visits to Pittsburg and Cincinnati in former periods.



An Artistic Niche in Which There Is a Statue of Miss Thespian.

The ten-story portion of the building is entirely of a mottled grayish tint—the trim as well as the more solid-work. The theater proper presents a less broken surface. The body color is of amber cut into large parallelograms by broad white diagonals. The trim—and of this there is only enough to break the monotony of the wall—is of the same mottled gray finish that characterizes the office building section. The whole is topped by a mansard roof of green tile. Just above the side-walk level back near the alley is an artistic niche sheltering the replica of a bit of old French garden. Just above this, a small quaint balcony has been worked out.

All in all, this new theater is decidedly a contribution to the artistic and architectural future toward which the new Chicago is striving. Marshall & Fox were the architects, and the Longacre Construction Company, the builders, while the American Terra Cotta Company placed, as well as manufactured the terra cotta work.

There is another feature about the Woods Theater that marks a new use of terra cotta. We all remember the familiar country farm houses that one used to see all through the east and the middle west—the white frame house with the green blinds. Certainly we all remember the green blinds. Home wouldn't have been home to many a boy of the last generation without those green shutters. They swung open from all the windows except the front parlor windows (saved from the sunlight except on Sundays) and then there were one or two other green blinds, generally one under the front gables, and one on the side of the house somewhere, and Johnnie never could quite figure where those particular windows were to be found from the inside of the house. Then came the disillusionment — they were "fake" windows, with perpetually closed blinds and nothing more. Well—Gates has got the green blinds for fake windows faded. He has gone them one better and then some. Instead of putting up shutters to hide windows that never were, he has put in French window effects—French windows that aren't French windows at all, but terra cotta panels, arranged and pointed to look like leaded glass. Perhaps it would be a little too barefaced a stunt to put over on the little white farm house, but a theater is only the home of the make-believe, the reproduction and the imitation anyhow, and it is exceedingly appropriate and very beautiful.

The most striking of these windows is under a terra cotta canopy at the north end of the Dearborn street side and directly above the French Garden niche. It is almost a story in height, and it takes a careful view to determine that if you look closely enough you will not see into a darkened room or hallway. The terra cotta is so dark it is almost black and highly glazed, and the setting and pointing has been perfect. Just to the south behind the fire escape is another similar "window" considerably shorter, and still further to the south above the opening onto the fire escape appears a handsomely panelled, but perfectly immovable transom of terra cotta.

Close observation shows that this same dark glazed terra cotta appears again and again in the trim, as the centers and panels which are surrounded in relief by the grey mottled terra cotta. This scheme completes the harmony of tone of the whole exterior.

THE PATHOS OF DISTANCE.

By E. T. Meredith, Member American Mission to Great Britain and France.

IN ENGLAND AND FRANCE I have seen things which I wish could be burned into the conscience of every business man in the United States. I have seen factories in ruins, office buildings blown to bits, commercial districts, miles in extent, lying deserted and silent, grass growing in the streets like places of the dead—everything that years, perhaps hundreds of years of patient industry had built up and passed on as a heritage from father to son—all vanished.

We in America have known nothing like this. We can know nothing like it. Thanks to our allies, these experiences will be kept from us. That factory of yours in New England, that mine of your neighbor's in Michigan, that farm I own in Iowa—they are being protected today by the untold sacrifices of the soldiers, the business men, the women of England and France.

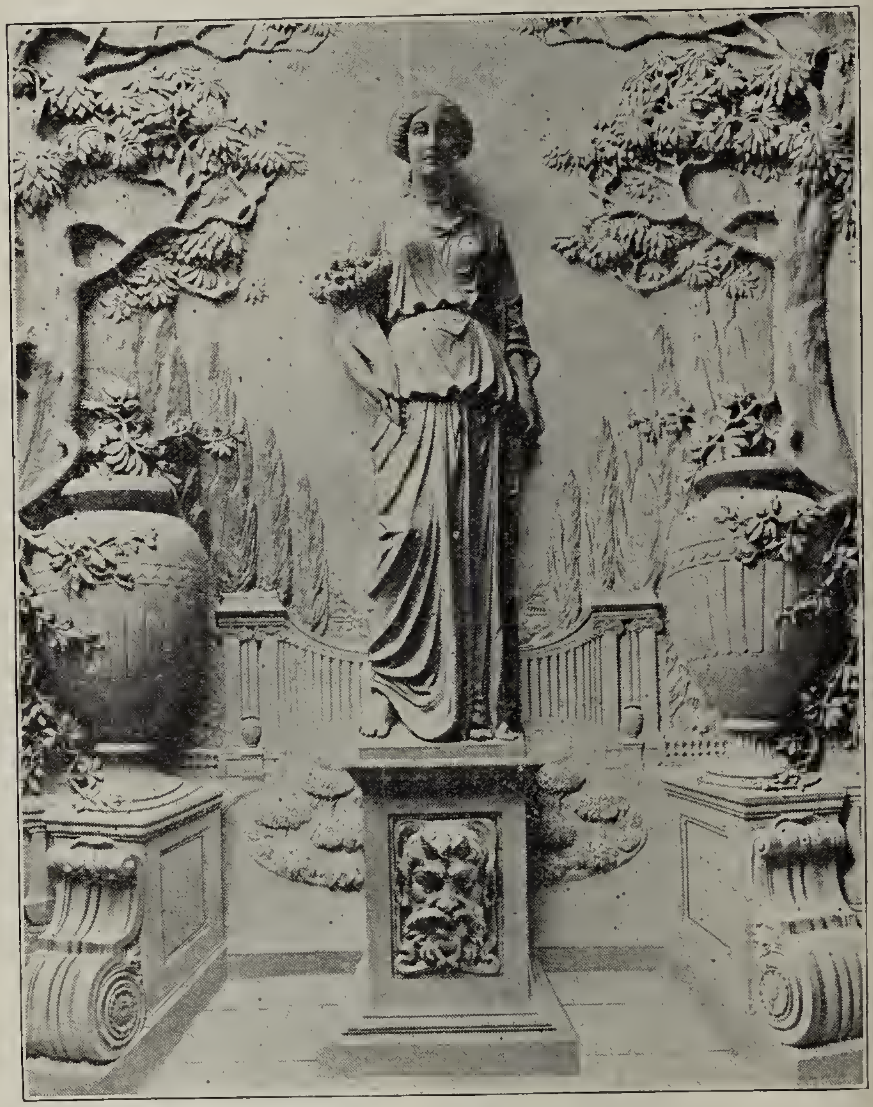
Why then should we complain? Why should we protest that our business is ruined? Why should we bewail lessened profits, cavil at high prices, inconveniences, hard conditions? Why should we rage at the disaster that overtakes our business?

Our business! Let me tell you something more of what "our business" means in England and France—as I have seen it. I talked with business executives, past their prime, men so old and weary that they would be glad to stop a bit and rest before they die. Yet they carry on. They, like those famed old legionaries of France, "have no time to die." They battle with conditions which in a month, a week, a day, may sweep everything out of existence. I saw a great shipbuilder, a fine old Briton, at his work—all three of his sons gone. At his side stood the grandfather, now in his eightieth year, doing what he could. I talked to a barber—the sole survivor of four brothers. I was chauffeured by a one-time British capitalist—it was his own car—and one of his legs, a soldier's reward, was made in the United States!

These business men overseas, our allies, are war weary. The strain is great, the enemy strong. Bitter is their lot. But do they protest? Do they despair? No! Grimly they carry on. Again and again they send their sons to the battle front. Their daughters—they see them rise at 6:00 in the morning to search the casualty lists for the name of a brother or sweetheart, then depart for a long day's work in factory, field or office. They themselves—even their nights are not given them for rest. When evening comes they report for special duties. In the British capital thirty thousand of them —bankers, lawyers, lords and sirs, the shopkeepers of London, men too old, too crippled, too sick to serve at the front—police the darkened city streets.

I was in London when sons of these men gave their lives to plug up the neck of Zeebrugge Harbor. I felt then, as I know now, that by that heroic deed, they defended not only the Thames and the coast of Kent, but the harbors of Boston, New York, Charleston. Those lads over there stand on guard before our mills, our stores, our homes. Their spirit—their will to win at any cost—is emulated by their business elders at home.

Our business? **Our** profits? **Our** lives? Good God, will we ever open our eyes to see the truth? Can we ever repay the debt we owe? The time has come for us, the commercial men of this country, to relieve our French and British allies overseas of their appalling burden. Their soldiers are now our soldiers, as truly as if they wore our uniform; and our boys are theirs. Business over there, too, is American business. It is fighting the battle that will save us, along with the people of England and France, from destruction. A British or French plant wiped out is an American plant wiped out. A French town bombed is an American town bombed. Blood drawn there—we bleed also. We are one allied people in this fight. And united we stand—on both sides of the sea!—The Nation's Business.



Miss Thespian—A Bit of Dainty Sculpture in the Niche or Window.

We are told that the three vital necessities of mankind are food, raiment and shelter. We might also add that it is in connection with these that we indulge a lot of our desire for luxury.

Good roads bonds, with the public getting their surplus money in them instead of into wildcat promotion schemes, will serve to do other good things as well as help get a general system of serviceable highways.

Facilities for handling constitute an important factor in the element of success in manufacturing clay products of all kinds, and many a man can help his business along by giving more thought to the details of this kind.

THE DIVERSITY OF PRODUCTS.

ONE OF THE ever-recurrent questions in the clayworking industry is that of the diversity of products—the question of how many different kinds of products one should undertake to manufacture in a given plant, and the counter-question of whether or not one should seek to specialize and confine his energies to the production of a very few similar products. We find this question of diversity mixed through all branches of the clayworking industry, with many variations in the way of answers furnished by industries as they do exist, and nothing much on which to base a definite theory or positive rule for guidance.

There are men in the brick making Industry, for example, who have made a pronounced success by specializing in practically one branch of the industry. Some specialize in building brick, others in paving brick, others in fire brick, and often the success is such as to encourage the idea that specializing is the proper thing, that is the confining of the work to a limited number of items all directly related.

Woods Theatre, Chicago—A Happy Combination of Business Building and Playhouse.

On the other hand, one encounters many reasons and arguments in favor of greater diversity of product and less effort at magnitude in some special product. Perhaps the best basic argument on this point comes from the fact that the brick industry is more or less a local industry. The weight and heavy freight charge for shipping over long distance is such as to put a limitation upon the territory covered. So while special items in face brick and fancy bricks may be shipped over long distances, when we get down to the common and cheaper brick the limitation here is easily apparent and it raises a question if it would not be wise to draw in the lines some on even the high grade articles and diversify rather than to specialize and to extend the shipping territory.

It is a question that furnishes room for almost inexhaustible argument on both sides, and around many angles as well. In the old countries the practice has always been to diversify much more than in this country. For example, the yards making building brick will commonly make roofing tile, paving brick, drain tile, sewer pipe, so that almost anything that might be needed in the way of brick or burned clay products for either structural or engineering purposes could be had at the local brick yard.

This is a practice that has never so far found wide favor in this country. For just what reason it is not so easy to say, except we take as a reason the general inclination of American manufacturers to specialize and work toward a large output of a limited number of items for economy in manufacture. One of the main lines of development in all branches of industry in this country has been that of labor-saving machinery designed and constructed on the theory that cost reduction comes through increased production. This, in turn, leads directly toward specializing and striving to cover a wider range of items to serve only a local trade.

There is no positive answer can be had to the question, nor a universal rule laid down, because of the many factors that enter. There is the question of raw material and its peculiarities, the question of location for distribution, or of the needs for local surroundings and so on. Still, no one can help being impressed now and then with the idea that more diversity among some of our brickmaking plants, for example, the adding of roofing tile, would help the cause of the clay products in the building industry.

It is for this reason that the question is interesting. It is a question that may well receive attention at conventions and be discussed from all sides and angles, because somewhere out of the discussion and from the varying opinions and different experiences we should be able to get some light that will be useful and beneficial to the average brick manufacturer in solving this problem to his own satisfaction in his own particular locality.

REGULATING THE SHIFT OF LABOR.

The Employment Service of the Department of Labor has finally taken the bull by the horns and will regulate the shifting of labor by eliminating other employment bureaus and striving to have all this seeking of jobs and seeking of men done through the governmental channels. This move was inevitable, for ever since the war started there has been much confusion on account of labor shifting from place to place in pursuit of higher wages. Competitive bidding on the part of those needing help has raised wages to points unheard of before in the land. That was bad enough, but the restless shifting from place to place added confusion to the list until we had reached a point where some wide and authoritative regulation became essential. Meantime the government had built up quite a service, primarily to help get those who wanted to labor and those who needed laborers together, but the same agency is well qualified, and is the natural channel through which to get regulation and to curtail the unnecessary shifting about.

WAGES OF BRICKLAYERS.

Bricklayers have been receiving wages this summer ranging from 75 cents to 90 cents an hour, with time and a half for overtime, the wages varying some in different parts of the country. In Chicago the rate agreed upon for one year from last June 1 is 81¼ cents per hour. Carpenters in Chicago have also been raised to 80 cents, which seems to be the highest price paid anywhere for carpenters.

BUTTON-HOLE TALKS.

THE MAN ON THE STAIRS.

THERE WAS A peculiar air of stillness about the house, nestled there in the shrubbery and blooms, and there was crape on the door knob. All about it nature was rampant, the leaves fresh and green, the blossoms profuse, gorgeous in color, all the vegetable world at its utmost vigor and the air was like wine.

W. D. Gates.

Inside the house there sat, thickly clustered, the friends of him who had been called to go, waiting for the last sad rites and bearing tribute of their love and regard.

The house, the rooms, the furnishings, the trees and the flowers all had been familiar to him in his earlier years, before he had gone out from them and merged his life in the whirlpool of the great city. Now, at the end of it all, he was back to his final rest with his fathers.

Shut within the casket was all of him but the life, all but that intangible something that is so fickle, so volatile yet so important and so powerful; that which comes with the first breath and goes out with the last; that which rules, governs and controls every act of the body and yet is intangible and evanescent. The flesh and bone were in the casket but this intangible something had gone out from its flesh and blood abode and departed into that region of mystery which is beyond our ken and yet the goal to which we each must go.

In the room the silence was intense, each one seemed to hush his very breathing as he waited, glancing at the flower covered coffin. The odor of the flowers was hidden by the smell of fresh varnish, the "Coffin smell" that young children associate with funerals.

Not only was this room full but there was an overflow in the adjoining rooms and a group on the verandah, for this was a country funeral, where the city sends back its dead to the home of their youth to find their lasting rest with their own in their childhood home.

Sitting on the bottom step of the stairway was a man who had been closely associated with him who was dead. He was older and one who had entered into every phase of the city's life, its shadows as well as its sunshine, had rubbed its soiled places as well as its glittering polish. His mating had been uncongenial and, bound together with manacles instead of the tender bands of love, they drifted apart, embittered and with love turned to hate. He had drunk deep of all the supposed joys of the city only to find bitter dregs at the bottom of each cup and had thus grown more and more cynical, skeptical and unbelieving. The memories of his mother and her teaching were blotted out and forgotten and money, success and prestige had come to be his only measure and desire.

The solemn service had progressed, the chapter read, the prayer made, the sermon preached, but this man enthralled and held me for I knew of him, of his reputation and of his close association with him who was dead. Now as I looked a sudden change came over him, he bowed his head hiding his face in his hands through which the tears showed while his body shook with sobs only partially suppressed, as the clear, sweet voice of a young girl floated out through the still rooms.

"Abide with me; fast falls the eventide;
The darkness deepens; Lord with me abide."

Sobs shook the form of the man on the stairs, big, honest sobs but slightly suppressed. All the sordid grime of the city, all its stain, its hustle, its wild artificial life, all its dross was gone and he was again a boy, a trusting, simple country boy, at the knee of the mother thus brought back to him in the melody of the song as she used to sing it.

"Swift to its close ebbs out life's little day,
Earth's joys grow dim, its glories pass away;
Change and decay in all around I see;
Oh, Thou, who changeth not, abide with me."

The sweet, clear, pure voice of the singer carried the melody as well as the words to him and thrilled him, stirred him, wrought memories within him. His association with the man in the coffin. Their business and social relationship stood out appealingly to him now that it was all over, that nothing in it could be changed. His own past seemed so sordid, so different from his boyish dreams when he was so trustful and hopeful, unsophisticated but clean. All he had won from his fight in the city seemed so pitiful and transitory, so meagre and stained as against the clean aspirations of the boy brought back again to his mother's knee by the melody of the old song.

"Heaven's morning breaks and Earth's vain shadows flee;
In life, in death, O Lord, abide with me."

The voice of the singer died out, the ceremonies went on, the man on the stairs, rousing as from a trance, pulled himself together, but the song had worked its mission.

—GATES.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE CALIFORNIA Clay Products Manufacturers are making every effort to have the fuel restriction modified, so that they can make 75 or 80 per cent. of their normal product. They state they started the year with a smaller surplus than usual, and while there has not been a normal demand, there are a certain number of jobs which should be carried to completion. Some of these are of an imperative nature for the welfare of the shipbuilders and other Government enterprises, and others will cause considerable commercial loss if postponed too long. If there was a real scarcity of fuel on this coast, these latter would not be pushed at this time, but with ample fuel to meet these demands they think the Government should not place the same restrictions on them as are placed on other districts, solely for the sake of uniformity in orders throughout the entire country. The recent announcement that the Government had decided to allow an increase of 15 per cent. of fuel consumption brought some relief, especially in the interior, but about the Bay, the manufacturers assert there should be still larger concessions. In order to bring this matter before the proper authority at Washington, the California Clay Products Manufacturers held a meeting on July 18, at which a very full representation of the trade was present. A request was forwarded to Washington that the War Industrial Board appoint a secretary to have charge of the interests of the clay products men. A committee of three was then appointed to represent the different branches of the trade, and arrangements made for these members to visit Washington when the interests of the trade demanded it. Those appointed were George R. Chambers, vice-president of Gladding, McBean & Co., who will represent the sewer pipe, chimney pipe, flue lining and drain tile manufacturers. W. W. Dennis, manager of the McNear Brick Co., will represent the manufacturers of common, face and paving brick, and Howard Frost, president of the Los Angeles Pressed Brick Co., will represent the hollow tile manufacturers. Mr. Dennis was recently in Washington, where he had a chance to tell the War Industries Board of the clay industries situation, especially as it refers to the branch in which he is most vitally interested. He is very confident that further concessions will be made to the manufacturers of the coast, if not by a direct increase in the fuel allowance, then in a very liberal interpretation of those things which shall be regarded as essential. Mr. Chambers has been called to Washington to give his views and he expected to reach the capital about August 1. This meeting was postponed, however, and Mr. Chambers now says he expects to leave during the second week in August. On this matter of giving information to the Government about Pacific Coast conditions, the first of the California men to appear before the War Board was J. T. Roberts, of the Stockton Fire and Enamel Brick Co., who was in Washington in June.

There are comparatively few large manufacturers of brick in California, but there are a large number of yards, which are making brick for local consumption, and the output of these in the aggregate is considerable. The large manufacturers are a unit in appealing to the Government to increase the fuel allowance, but Mr. Dennis, who has charge of the work, says that he is getting replies very slowly from the smaller yards. He says it is the President's policy to consult with the small manufacturer as well as the large one, and for that reason he is making every effort to get in touch with all California brickmakers. Those who have so far replied to his communication have furnished the information which he sought relative to stock on hand, average fuel consumption and other matters regarding which the War Industries Board requested information. Mr. Dennis says he believes that within another couple of weeks he will have enough information tabulated to make out a strong case before the War Board. A number of the smaller brickmakers in the interior, especially those which operate one kiln during a portion of the year for neighboring communities, are expected to report that they can get along without an increase of fuel allowance, but it is expected that practically all the larger manufacturers will ask to have their allowance increased and will present their reasons for the request.

Fire, the origin of which has not been determined; caused the destruction of the Lincoln (Cal.) factory of Gladding, McBean & Co. early on the morning of July 29. The company's offices and clay sheds adjoining were also destroyed. The big main factory, comprising three buildings of brick, corrugated iron and frame which covered a ground area of 250x800 was left a mass of ruins when the fire was finally subdued. The terra cotta plant, nearly equal in size to the main plant, was saved from the flames. The loss is estimated in the neighborhood of $200,000. In the destroyed plant was much valuable machinery, which it will be difficult to duplicate in the present condition of the machinery market. Vitrified pipe, hollow tile, roofing tile, face and fire brick were made at this plant. Some of the office records were lost and others in the safe are believed to be safe. Gladding, McBean & Co., of San Francisco, are owners of the plant, and as soon as the news reached the city that the plant was on fire, President A. J. Gladding and Vice-President George R. Chambers left for the plant. It is understood that the plant will be rebuilt as soon as machinery can be secured. The plant has recently been working on brick and tile for the Government. It was built in 1875. A. L. Gladding is at present in the East.

The price of common brick in the Bay district is about to be advanced from $12 to $14 per thousand. The brick men say that they can no longer afford to sell at the old price, in view of the advancing cost of labor and other conditions of the market. They claim that brick at $14 in this district will be no higher than it is in the eastern centers, where the demand is many times as great as here and the possibilities of making a profit in the manufacture are therefore very much greater.

The U. S. Quarantine Station, Angel Island, Cal., has called for bids for a considerable quantity of terra cotta sewer pipe to be delivered at the wharf in San Francisco for trans-shipment to the island.

The Pacific Pipe Co., whose plant is located at Corona, Cal., has received a large order from the Government for fire brick to be furnished to the oil refineries in the southern part of the state.

The development of the magnesite industry in this state is showing decided increases every month. The Stockton Fire and Enamel Brick Co. has been calcining magnesite for some time, but it announces that it is now devoting one kiln to this work exclusively and is contemplating the building of another kiln for this purpose. This company has been experimenting for some time in making magnesite brick, and it is said to have completed its experiments and to be about ready to make these brick on a commercial basis.

The Western Magnesite Co. has secured a large warehouse at Livermore, and is installing a plant there for handling magnesite ore. It is reported that the company has closed contracts for the delivery of 150 tons of the ore daily.

The magnesite plant at Porterville, which closed down in June on account of freight conditions to the East, has resumed operations on a large scale.

The Livermore Fire Brick Co. has secured the contract to furnish the terra cotta for the additions being made to the Mills building in this city. The company bid $5,970 for this job and won the contract. The entire cost of the improvement which is of brick and terra cotta is $49,320.

Excavation work has been completed, and the foundations are being constructed on a group of factory buildings for the Remar Baking Co., Oakland. Bids are now being called for the brick work. The buildings will cost about $150,000.

The Pacific Tile and Terra Cotta Co. has made application for a change of its name to the Pacific Mineral and Chemical Co. The company's plant is located at Glendale, Cal., and the new name is desired, as it more nearly represents the company's present activities than the old one.

H. H. Haynes, of the Salt Lake Pressed Brick Co., Salt Lake, Utah, was a recent visitor to San Francisco, where he got in touch with the local pressed brick men, to the end, it is understood, that united western action regarding the business may be inaugurated. SUNSET.

San Francisco, August 5, 1918.

GANISTER MAKES GOOD SHOWING.

Good progress has been made in the production and use of ganister or quartzite, used in making silica brick, according to a preliminary report of the U. S. Geological Survey, prepared under the direction of G. F. Loughlin. The total ganister sales for the year 1917 were 1,295,851 short tons, valued at $1,350,789, an average price of $1.04 a ton. This was an increase of a little better than 50 percent in quantity as compared to 1916, and of 155 percent in value. In 1916 the average price was only 62 cents. Pennsylvania, with 26 plants, furnished the bulk of the ganister output, more than a million tons, in fact. Other states furnishing this product were: Wisconsin, Colorado, Alabama, Illinois, Maryland, New York, Ohio, South Dakota and Tennessee.

There is no question in the minds of men who ought to know that we will be called upon to exercise fuel economy all through the next winter. This should be a reminder to brick men that it will pay to install modern dryers and devices calculated to save fuel in burning brick.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

Part XXVIII.

MACHINE HANDLING AND SETTING.

A THOUSAND bricks will require 6,000 to 7,000 pounds of clay. This must be dug, prepared, and manufactured into bricks. These bricks contain approximately 1,500 pounds of water which must be driven off, requiring an average of 300 pounds of coal. The dried bricks must be set in the kiln, followed by burning, which requires 500 or more pounds of coal, and finally the product is removed from the kiln and loaded for shipment. There are six handlings—taking off the green bricks and placing them on cars, tossing, setting, drawing (which involves tossing), loading on barrows, loading from barrows to cars. Two bricks at a time are handled in the first operation, two to five in the second and third operation, four to six in the fourth, fifth and sixth operations.

Consider a stiff mud factory with a kiln shed 1,000 feet long at the end of which is a dryer 120 feet long, and beyond this an average distance of 80 feet to the machine. The bricks are handled on cars in units of 400 to 700 and the average distance traveled to and into the kiln and return will be around 1,500 feet, including four transfers.

The burned bricks are handled in units of 100 to 120 an average distance of 150 feet, including return, or 750 feet for 500 bricks, making a total distance of 2,250 feet, for each unit of 500 bricks. For each 1,000 bricks, we handle three tons of clay in small units six times and travel a distance of one-half to three-quarters of a mile. We also move a quarter of a ton of coal and shovel it twice or three times.

It is not surprising that the profits are small at the prevailing prices. It is surprising that we have been so slow in adapting mechanical devices to do the greater part of this work. A majority of yards today operate with dryer cars, carts and wheelbarrows, by hand and horse power. The work is heavy and the wages paid are low, compared with other industries and in consequence brick yards have difficulty in holding sufficient labor to do the work in times of prosperity.

A number of larger yards use electric power to move the product from the dryer to the kilns, and the electric truck is being tried out for the movement of the burned product.

Mr. Lemon Parker, in the Transactions of the N. B. M. A., gives the following data relative to handling a variety of burned clay ware:

	Barrows.			Electric Trucks.	
	Distance, ft.	Cost, per ton.		Distance, ft.	Cost, per ton.
	501	$0.256		557	$0.16
	285	0.129		483	0.121
	420	0.197		478	0.146
				537	0.179
				504	0.176
av.	402	$0.194	average	512	$0.156

The barrow work for 512 feet on the same basis as for 402 feet will cost $0.247 per ton.

The use of electric haulage will lessen the cost of moving bricks, but does not touch the several handling operations. A portable elevator has been used to elevate the cars of bricks in the kiln to the setting level, thus reducing in some degree the setting labor, but its particular advantage would be in higher setting. It would eliminate the tossing in so far as a setter could reach the bricks on the car without changing his position. When the bricks on the far end of the car are beyond reach, it is better to have a tosser than to require the setter to walk back and forth in order to reach and set the bricks. Furthermore, a setter can place more bricks when they are tossed to him than he could if he had to pick them from the car. There would be some gain in labor, particularly if the setting was of such height as to require an intermediate tosser, but considering the time required to move the elevators, etc., the net gain would not be large.

The Scott System, installed in a number of yards, extends the take off belt (from a stiff mud machine) the full length of the kilns, in one instance over 800 feet. Opposite each kiln a cross conveyer carries the bricks into the kiln. One man can transfer 50,000 bricks per day from the long take off belt to the cross conveyor. Take off and dryer transfer men are thus eliminated, except the one man above mentioned.

The bricks are set in the kiln 6 to 8 courses high all over the kiln floor. The conveyor is centered longitudinally in the kiln and within reach of the conveyer, the setters can pick the bricks from the belt and set them, but when the setting is beyond reach a tosser is needed. Whether there is any gain in the tossing and setting labor by this method over the ordinary method may be questioned, but there is a decided gain in the pace set by the machine. The bricks have to be set as fast as they are delivered to the kiln, or if not they are carried through the kiln and dumped off from the end of the conveyer, at the end of the kiln outside, where they are mute evidence of slack work or insufficient setting force. Men, as a rule, do not like to be "snowed under" or "buried," as the saying is, and will work harder, within a reasonable limit, to have a clean record at the end of the day, than they will where the onus of a bad record may be shifted to any slacker in the crew.

The bricks so set are dried at night in the kiln, or two nights and a day may be used, if the setting is in two kilns, alternately. The second day, the conveyer is raised to permit a second setting of 6 or 8 courses on top of the first setting, and third, fourth, and fifth settings follow, in the same manner, until the kiln is filled to the top.

It was intended to use the same conveyer system in removing the burned bricks from the kiln, but this does not work out well, as one can readily see. The first shipments from a kiln would be all soft top bricks, followed by practically all hards, and finishing with all arch bricks. Such shipments do not properly fill the orders.

The Fiske System introduced a number of years ago in New England was a radical departure from established methods. The bricks (stiff mud) were racked in units of 1,500 on forms on the factory floor at the take off belt. An electric traveling crane picked up the mass of bricks, by means of a lifting rig equipped with a series of fingers spaced to correspond with the setting on the forms. Each unit was lowered by the crane into a dryer, then conveyed to the kiln, and set in place by the crane, and after being burned, it was the intention to similarly remove the bricks from the kiln and convey them to the shipping station. This system required an open top kiln, or one with a removable crown, as in the initial installation. One crane man and one helper sufficed to put the bricks into the dryer and thence into the kiln. The crane was also used to handle the dryer and kiln covers and bring in the kiln coal.

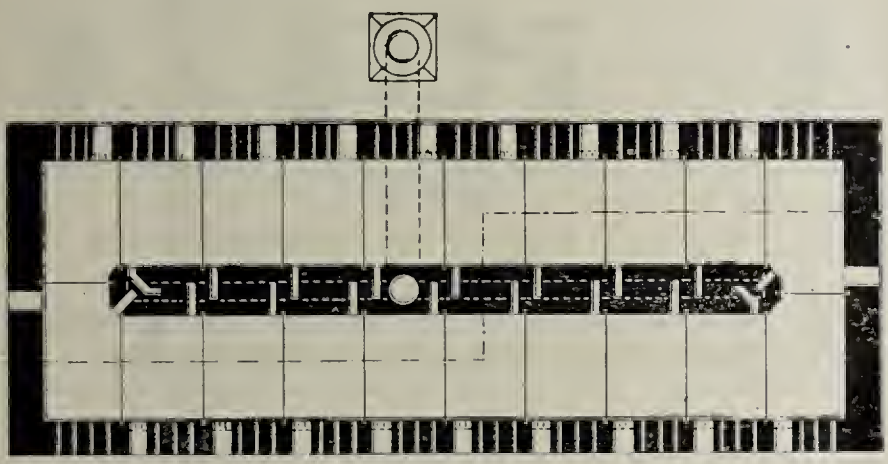


Figure 56.

Following the Fiske initial installation, a somewhat similar system was developed, in the West, for dry pressed bricks. The bricks were handled in smaller units and taken from the press to and into the kiln on a single rail overhead trolley (telegraph track) and a kiln crane was used to place the bricks.

The outcome of these systems is the machine setting, used chiefly in Chicago. The bricks are placed on cars from the take off belts in units of 600 to 1,000 bricks, and the car setting corresponds to the required kiln setting—arch and bench units, head units, casing and regular setting units. The cars are taken from the dryer to the kiln on transfer and kiln tracks, in the usual manner, except that motor trams are used for the haulage, handling several cars at each trip. A traveling lifting crane with a fingered lift picks up the units from the cars and places them in the kiln in the proper place.

A simple crane handling in use has the usual car system delivering the cars of bricks to the kiln where they are picked up by a crane and placed at the setting face convenient to the tossers and setters, the setting being done by hand. Platforms with turn tables are placed in the kiln at intervals convenient for the setters. The cars of dried bricks are placed on these platforms, and in setting the bricks, as soon as one side or end of each car is emptied the car may be turned on the table bringing the other side or end within reach of the setters.

After the bricks are burned the kiln is emptied by piling the bricks on platforms which when loaded are picked up by the crane, carried to the car and dumped, the platforms being returned to the kiln. The tossers both in setting and unloading the kiln are largely eliminated, and the wheelers from the kiln to the car are replaced by one crane man and a car trimmer.

The up-draft kiln or any open top kiln is especially adapted to machine operations.

Open Top Continuous Kilns.

The advantages of the periodic clamp and up-draft kilns have been pointed out—low first cost, sanitary conditions, large capacity, economy in fuel, availability for storage, and adaptability to mechanical devices for handling the product.

The objections are the commonly large percentage of soft bricks, the frequently inferior arch bricks, and the excessive loss in broken bricks.

There is an insistent demand for an open top continuous kiln, particularly in the South. Such a kiln is comparatively low in cost; it is as sanitary as the up-draft kiln which is an important feature in hot climates; the capacity, single fired, is limited to from 30,000 to 50,000 bricks per day, but this is sufficient for the average plant; being regenerative, the kiln is more economical in fuel than a periodic kiln; it is adapted to crane setting and drawing; it gives a larger percentage of hard bricks and largely eliminates arch bricks.

Several years ago an attempt was made in New England to operate a scoved kiln as a continuous regenerative kiln. There were no arches across the kiln, but instead the bricks were set to form a series of longitudinal flues in the bottom as in a crowned ring kiln setting and vertical flues extended from the trace flues to the top of the brick setting. These vertical flues were spaced about 42 inches longitudinally and transversely, and were used as feed holes. The kiln was cased and platted in the usual manner, except the tops of the feed holes were provided with suitable caps.

At intervals of approximately 16 feet corresponding to sections of a continuous kiln, were underground transverse draft flues connected with a lateral main (fan) draft flue outside the kiln. The draft flues within the kiln area had graduated openings in the kiln floor.

The operation was identically the same as that of an open top continuous kiln or a crowned ring kiln.

It could hardly be expected that such a radical departure from the usual scove kiln operation would result in a perfect burn in the first attempt, but as far as could be determined from an examination of the product in both types of kilns on the same yard, the advantage was with the continuous operation. The burn was lacking in hardness but otherwise was better than that in the regular scove kiln, and undoubtedly had the test been repeated, there would have been improvement in the results.

It is but a step from such a crude continuous operation to the open top continuous kilns which are successfully operated in Europe, and there are a few successful installations in this country besides several failures. A kiln principle is not to be condemned because of initial failures to adapt it to American conditions, otherwise we would not now have in operation the several hundred continuous kilns of various types. There have been a number of disappointments and several flat failures in the development of continuous kilns, but in spite of these, the regenerative principle has won its way and now is a large factor in the ceramic industries.

The Chmelewski (Finland) kiln, patented in this country, and offered to the clayworkers several years ago, is an open top continuous kiln. It is shown in Fig. 56 (plan), Fig. 57 (cross section) and Fig. 58 (longitudinal sections). It is simply a ring kiln, without a crown.

In the original kiln, the tunnel is about 12 feet wide and 10 feet high, in sections 16 to 20 feet long, each section controlled by a single inlet, at the floor level, into the main draft flue between the parallel tunnels. The sections are closed by sheet iron plates lowered from the top into a slot provided in the brick setting. The bricks are set to form longitudinal flues in the bottom spaced about three feet apart, and each flue is 8 inches to 9 inches wide and the height of four (American) bricks. Cross flues, 10 inches wide and 16 inches high, and spaced five feet apart are also set in the bottom. These cross flues correspond with the arched opening in the outside kiln wall. Vertical flues spaced about three feet apart, extend from the top of the longitudinal flues to the top of the setting. These flues are about six inches square and serve as stacks in the early stages of the drying and as feed holes and fire ducts during the burning.

The set bricks are covered with two courses of platting and these with several inches of dirt. Openings are left in the platting corresponding with the vertical flues and these are fitted with collars and caps over the compartments under fire.

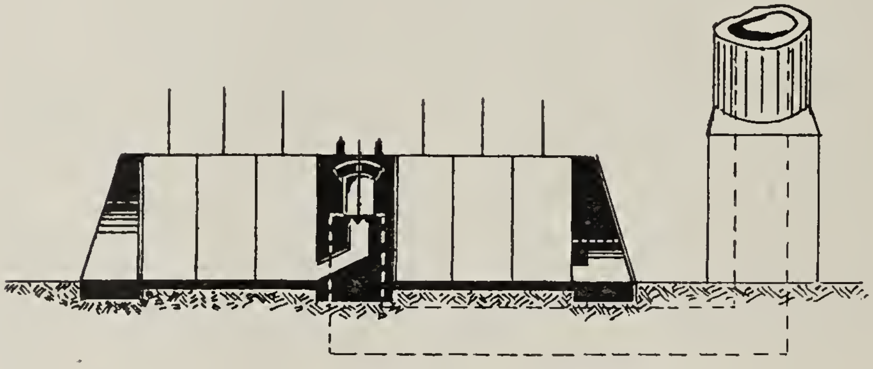


Figure 57.

After a section is set and platted, fires are started in the small arches in the outside walls connecting with the cross flues. The vertical flues open through the platting giving the necessary draft, and the drying can be controlled by these openings. By closing those on the outer wall side and opening those on the inner wall side, the heat will be drawn completely across the kiln, or to any degree desired, by closing the openings on the inner side and opening those toward the outer wall.

When the bricks are dry enough and hot enough not to be injured by the combustion gases, not to soot, etc., the damper between the drying section and the sections subject to combustion gases is drawn, and at the same time, the independent fires are extinguished and the small arches closed. Three or more sections will be drying at the same time, the number depending upon the time required for this work, in order to keep pace with the burning.

The coal firing is through the holes in the platting and is the same as any ring kiln firing—a small quantity of fuel in each hole at intervals of 12 to 20 minutes. The setting is also the same as in a ring kiln (Hoffman) except the independent drying flues.

The Otto Bock open top continuous kiln shown in Fig. 59 (cross section), differs from the Chmelewski kiln in that the draft flues are on top immediately under the platting, and instead of a single draft outlet for each section, the outlets are a series of openings about five inches square, spaced about ten inches on centers.

The tunnel may be below the ground level, as shown, or on the ground level, as drainage conditions may require. The tunnels are about 12 feet wide and 5 feet high, and the bricks (German size) are set 10 courses high (about 4 feet).

The kiln is fully continuous, having parallel tunnels with cross tunnels connecting the ends. The usual layout has nominally, 16 compartments each about 16 feet long, but since there are no doorways nor flues at intervals, which would designate sections of the kiln, the division into sections is simply a matter of working units.

There are the usual sections—heating up, burning, cooling, drawing and setting in—in connected continuous operation. After a section is set it is closed by a paper damper, and two such sections are watersmoking. The operation is as follows: sections 1 and 2 are watersmoking; section 3, setting; section 4, drawing, and the air for combustion enters in this section; sections 5, 6, 7, 8, 9, 10 and 11 are cooling, and the air as it passes from section 4 to section 11 advances in temperature to a red heat; sections 12, 13 and 14 are burning, and the products of combustion pass through sections 15 and 16, which are heating up. The dirt platting from section 4 is being removed and placed on section 3 as the work of drawing and setting progresses.

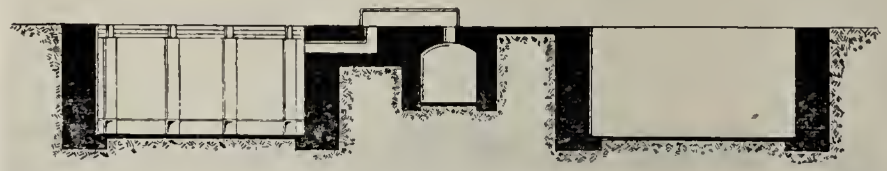


Figure 58.

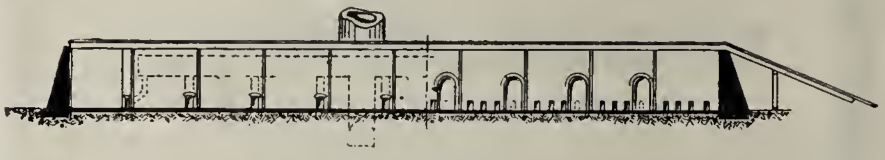


Figure 59.

(To be continued.)

NEW USE FOR BRICK SCHOONERS.

The brick schooners which have done duty on the Hackensack for forty or fifty years, and were to be broken up in favor of tugs and barges as offering quicker and more economical transportation facilities, have acquired a high value since the beginning of the war and have been taken out of the brick service entirely and are now doing duty as coastwise vessels or in some other capacity made necessary by the lack of transportation for war purposes. Vessels considered virtually worthless are assessed at fabulous figures. The owners are congratulating themselves that they did not get them broken up before the extraordinary and quite unexpected demand for ships of whatever size or value began. Not a schooner has been on the river this season. They are much too valuable for use elsewhere. One of these vessels has been in constant use on the Hackensack for upward of fifty years and was believed worthless. But now she is said to be held at a fortune by her owners. At any rate, she is doing her bit, even though she is long past the draft age.

Every citizen of the country is a partner in the organization for war, which means that the more stock you take in it the more earnestly you will work for its success.

Written for The Clay-Worker.

SEEN IN NEW JERSEY.

NOW THAT THE Government has said definitely what it intends to do about brick and has told manufacturers what it expects, New Jersey makers feel some easier; but that doesn't hinder the fact that their business is badly hampered and that conditions do not favor any improvement until after the war closes. Coal, transportation, labor, the three important elements in making and selling brick, are so badly curtailed that it is quite impossible to operate on anything like regular schedule.

Where a manufacturer owns motor trucks, or can sell to those who have trucks, the situation is better. Most of them can get together some sort of a force and by operating under the original order of 50 per cent. curtailment of coal they can and are doing something. Three of the plants along the Hackensack are operating under those conditions. The Hackensack Brick Co., for example, has its own motors and is delivering the brick it sells within delivery distance. Two others are delivering by trucks, but mostly in those owned by others. These three firms are about the only ones attempting to do any business.

The Merhoffs are burning a few arches as this is written and are laying up a few more, but as a whole the Hackensack district is quiet and almost nothing is done. Demand is light, and the price is up to about $13, with a chance of further advance in the near future. Not much snap is seen in the business as now conducted, and buyers are as indifferent as sellers. So the situation remains practically unchanged.

Manufacturers along the Raritan are hampered very seriously in their work by the same difficulties that confront manufacturers elsewhere. But on top of that is piled another which affects them more than it does others, very high towage charges. Tugs are so scarce and their prices for towing are so high that manufacturers are obliged to get from $14 to $15 for their common brick, and even that price gives them only a minimum of profit. But if they expect to get their brick to market they have to pay the price. It is quite impossible to do otherwise, as many of the deliveries are so far away that as yet they do not see their way clear to use trucks.

Probably not half of the capacity of the plants operating under the Government rules will be turned out this year. Some say that not more than one-quarter will be made. The Government is taking those as fast as they are turned out, and, excepting where a building operation was begun and to hold it up would mean serious loss, no brick can be obtained to go ahead with construction work. The Government's requirements in various localities are consuming the output of all the yards under present conditions.

The rumor afloat among brick men is that the Government will require a great many more brick the coming year than it has taken the past year. What all these are to be used for doesn't appear, but it is said that the conditions are such that the Government will take more brick than it ever has before and that manufacturers will be given priority in some directions to enable them to satisfy the Government requirements.

In and about Paterson building operations are at a standstill. The Board of Finance of Paterson will shortly arrange for bond issues, the proceeds of which are to be used in the construction of three new schools. Two grade schools and a high school are urgently needed, but the city will undertake no development of this sort as long as the war continues. Two or three new mills are in process of erection, but the material was all in hand and the brick required were delivered by motor, so no transportation that could be used for war was interfered with. Houses are the most serious lack. It would require about 1,000 apartments, or houses, as the case may be, to fill the present requirements for housing. Big development is probable as soon as it is possible to go to work.

The same observations apply to the larger places immediately surrounding Paterson. Passaic, with a population of approximately 100,000, needs at least 700 new houses or apartments. People have lived in tents in that city, which may do in summer, but are hardly comfortable enough to be generally adopted in winter in this latitude. Hackensack is underbuilt. Englewood wants new houses. Ridgewood is on the eve of important developments, while Rutherford wants at least 100 new houses as soon as they can be built. These are, none of them, for war workers, but for residents who will make these places their permanent homes.

At Jersey City, even though it has 285,000 population, conditions are quite as bad as they are in the smaller places. At least 1,500 apartments or houses are urgently needed. Some say 2,000. The growth of shipping along the Jersey shore in this vicinity has brought in many new workers who must have homes. Now they travel long distances to their work, manifestly a very inefficient way of doing, since the waste of time in long hauls is a dead loss which can never be made up. Some are of the opinion that factories will have to be moved out of the congested districts in order to permit the erection of homes for the employes. Others see in the improvement of transportation system a solution of the problem. Still, it is quite impossible to overcome the difficulties of transportation. Unquestionably, the war is going to bring about changes in this direction as well as in others. The thing brick men need to consider is to be ready to take advantage of whatever change may be devised as a result of the knowledge gained by the war.

Newark is so badly overcrowded that letters have been written warning people not to attempt to move there, since no houses or apartments are available. Experience of those who want houses match that of a man who went to Paterson to take charge of an important plant. He was obliged to wait six months for a house in the portion of the city where he wanted to live. Newark is in exactly the same plight, and no one can do anything for her at present. Later they hope to erect sufficient new dwellings to care for the surplus population, but at present the thousands called there by the shipyards and other war industries are widely scattered and often travel many miles to get to and from their work.

These are the facts in New Jersey, and they indicate something of the great rush to build houses which is coming as soon as men, money and material are released by the Government. BURTON.

ORIGIN OF CHINESE PORCELAIN.

Some one has unearthed a story to the effect that Chinese vitrified porcelain was discovered partly by accident back in the year 206 B. C. According to the story some Chinese workers in earthenware had set their pots in an oven to bake and forgot them. Later, when they remembered them and opened the oven doors, they found that the pots had vitrified through the long, excessive heating, and showed a very smooth, shiny surface. In this way, it is said, the process of enameling porcelain was discovered.

There are several good things we can learn from the French, and one of them is the savings habit. In this thrift stamps offer a ready means.

THE BONUS SYSTEM.

What It Is Doing for a Large Clay Products Concern and What It Will Do for You.

IN THESE DAYS of labor shortage the difficulties in this particular emphasize more than ever the absolute need of keeping the labor on hand interested and satisfied, thus making secure the labor requirements for the period of plant operation.

The draft and the great demand for men by the Government in industries manufacturing war materials offering heretofore unheard of wages has stripped many clay plants of competent employes and made necessary the hiring of untrained men with little knowledge of the clay business. The green hands employed and those the manufacturers have been able to retain must therefore be given close attention and offered an added incentive that will create an earnest desire in every man to bring every department up to its greatest efficiency.

The teaching problem, though difficult, becomes easier when the pupil comprehends the real value and need of increased knowledge for facilitating his own better living conditions.

The personal equation plays an important part in the establishment and successful operation of any new system involved. Knowing full well the necessity and value of keeping employes continually keyed up to a high point, ever alert to improve and economize, the bonus system will no doubt receive the hearty endorsement of manufacturers generally when it is thoroughly understood, and they are convinced that it will solve the problem. Many clay products manufacturers today have adopted a bonus system, and the majority report absolute satisfaction in its workings.

Whether the bonus system is based on piece work or covers a pay roll period does not matter so much in the long run, providing all departments are working one with the other for the main object in view. Due to the many elements entering into it, the piece work bonus system does not appeal as strongly to the writer as being as advantageous as the bonus system based on the pay roll period and covering the entire plant as a unit.

The latter system can best be explained by giving in detail the method employed in this connection on the plant of the Kankakee Brick and Tile Company, Kankakee, Ill.

Increasing Plant Efficiency.

The company was experiencing great difficulty in securing and holding labor under the old conditions, although kindness and personal interest were exercised to an unusual degree. After a careful analysis of the situation, the company decided to adopt a bonus system based on a two weeks' pay roll period. They established what they considered a normal production figure, covered by two weeks' operation, and the percentage of increase over the normal production was used in figuring the percentage of bonus. If the increase in production was 10 per cent. at the end of two weeks, every employe fulfilling the regulations was given a 10 per cent. bonus in wages. If the percentage increase was 15 per cent., then a 15 per cent. bonus was included in the pay envelope, there being no limit to the bonus to be paid. A bonus as high as 18 per cent. has been paid this summer.

The payment of the bonus is, of course, contingent upon the employe working six days a week, one day in twelve being granted as a holiday. This off day must be previously arranged for with the foreman so he may make arrangements for carrying on the work as usual. Very few of the men ask for the day off, for they are more anxious to get the increase in bonus than the pleasure of loafing.

Clay Pit of Kankakee Brick and Tile Co.

Filling of Train of Three-Side Dump Cars.

As a result of the adoption of this bonus system, with which the men are much pleased, the production has been greatly increased, although the cost per ton has remained practically the same as before. The wages, of course, were higher, but more work was done in the same length of time, due to the extra effort on the part of the men themselves to keep things going. Every workman had a special interest in the smooth working of every department of the plant. If there was lack of kiln room, the men were willing to go in when the kilns were hot and work a little harder, instead of making it an excuse for slacking in their work, going fishing, etc., while waiting for better working conditions.

In case some minor business has to be taken care of, the employe reports same to the office and the company gladly looks after it for him.

The men are paid at the end of each pay roll period (two weeks); the wages never have gone below the normal figure, and nearly always above, figuring around 10 to 18 per cent. No deduction is made if the figure falls below the normal figure.

The good effect of the bonus system can be seen in the general attitude of the men and the ship-shape condition of the plants, the company owning and operating two large factories.

Pioneer Methods of Manufacture.

Plant No. 1 is located six blocks from the court house in the town of Kankakee, and is the outgrowth of a plant started on that site in 1880 by the father of H. E. Taylor, the president of the present company. The old plant originally made what was then styled "slop" brick, an old-fashioned horse-driven tempering wheel being used in the preparation of the clay. The ware was hand-molded, dried in the open yard and burned in a scove kiln. The capacity of the plant was 6,000 brick per day, which was considered a very good day's work at that time. In 1882 a Brewer tile machine was installed, on which a brick die was used, and a round down-draft kiln 20 feet in diameter was built. This was used for burning tile, while the brick were burned in the scove kiln. The company prospered, and the demand for their product increased in such proportions that a round down-draft kiln was built every year for five years, at the end of which time the scove kiln was abandoned. In 1889 a Barron dryer was erected, and the plant operated all that winter, which was quite an innovation. The plant was operated in this fashion until 1894, when it was completely destroyed by fire. The plant was immediately rebuilt on the same lines, and continued in operation until 1900, when the five 20-foot kilns were enlarged to 30 feet. From time to time 36-foot kilns were built, the company now operating ten round down-draft kilns.

The Old Costly Way of Transferring.

The New Economical Electrical Way.

Change in the machinery was only made as to capacity, and the equipment now consists of a Brewer crusher, a Brewer brick and tile machine, Potts granulator and a Fate cutting table.

In 1907 a 12-tunnel Standard dryer replaced the old Barron dryer, and in 1913 a 6-tunnel Justice dryer was added. The clayware dryer cars are those of the Chase make. The plant now has an annual caapcity of 33,000 tons of ware. Brown indicating and recording pyrometers are used to very good advantage in the burning. The kilns are unloaded by a carrier system of the company's own design, which is operated by electricity, the tile being carried from the kiln to a point over the wagon, which greatly facilitates the work.

The raw material is shipped in from the immense pits at the No. 2 plant one and one-half miles distant. The gondola cars are brought into a large shed with storage facility below, and the clay is dumped through openings and then conveyed to elevators on a belt arrangement. This passes under a track leading to the coal storage sheds, the coal being handled in practically the same way. The clay storage shed is steam heated in the winter time by a radiator system along the sides and end of the building, which is narrow and low-roofed. This serves the purpose of thawing out frozen clay in the car before unloading.

Making Tile the New Way.

The No. 2 plant is located to the southeast of No. 1. While they make only drain tile (3 to 12-inch) on the old plant, they make hollow building tile as well as drain tile on the new or No. 2 plant. An immense clay-grinding and storage plant is one of the novel features of this factory, which has been in operation a little over a year. The raw material for both plants is secured from a 30-foot deposit of clay a short distance to the left of the factory, where 100 acres are owned by the company. No stripping is required, an electrically-driven Thew shovel digs the clay and dumps a yard of same into one of a train of three cars hauled to the incline by an Automatic Transportation Company's storage battery locomotive, which has been found to be very economical in operation. The loaded clay cars are taken up a 300-foot incline by winding drum and cable to the top of the building where they are emptied into American Clay Machinery Company's granulators, one being used for grinding raw material for No. 1 plant, and storage bin, while the other is used for grinding material to be immediately used on the No. 2 plant.

From the plant granulator the clay passes into a Brewer crusher and thence into a Brewer pug mill and upright machine. A Fate cutting table is used here, the same as on the No. 1 plant.

The storage bin which holds 750 tons of clay, or six days' run, is an immense shed running directly under the upper end of the incline from clay pit. A conveying system is used by which the clay is dumped automatically from a conveying belt into any desired portion of the bin below, the machine for this purpose being easily located at the desired point by moving same along the tracks between which the conveying belt passes. A spout arrangement drops the clay upon this belt. At right angles to the storage bin belt, running under a shed leading to a point directly over the railroad tracks holding the gondola cars, is another conveyor which loads the cars at odd times when the clay is not needed in the operation of the plant or for filling the storage bin. The spout can be turned to the right so that the clay drops onto this second belt conveyor.

The ware is dried in a 32-tunnel dryer (each track holding twenty cars) in forty-eight hours with waste heat from a large 40-chamber Haigh continuous kiln.

A Chase electric transfer holding two cars of dried ware transfers same from dryer into and along the passage running through the center of the kiln, there being twenty chambers on either side of the passageway. This electric transfer has given great satisfaction and saves much labor and time. The plant is operated entirely by electricity, the power equipment consisting of Westinghouse and General Electric motors, totaling 350 horsepower, ranging from 150 to 5 horsepower.

The Haigh kiln requires 360 pounds of coal to the ton of ware, while the kilns on No. 1 plant require 500 pounds to the ton. Brown pyrometers are used here, the same as at the other plant, and with equal satisfaction. A complete cost-keeping system enables them to keep an accurate check on all departments.

Conveying Device for Emptying Kilns.

Mr. Ellis Lovejoy, of the Lovejoy Engineering Company, Columbus, Ohio, was the engineer in charge, superintending the construction of the plant, and much credit is due him for the splendid arrangement and adequate equipment.

The selling territory of the Kankakee Brick and Tile Company includes Indiana, Michigan, Wisconsin, Illinois, Iowa, North Dakota, Minnesota, and even the Panama Canal. Twenty cars of ware were shipped to the latter point.

The officers of the company are H. E. Taylor, president; S. D. Knight, secretary-treasurer, and S. M. Hawk, vice-president and cashier. Mr. Taylor has been with the concern since 1883, his father, D. C. Taylor, being one of the pioneer brickmakers of that section and a man of influence in that part of Illinois, being a successful candidate in many a political campaign.

THE FUTURE OF DRAIN TILE.

The future of drain tile, like the future of building brick, is a thing that depends quite largely upon the boosting efforts of those engaged in its manufacture. Drain tile, like brick, will continue to be used and the interest will grow in it as time passes and people study the business of farming analytically. It has been found, however, that the thing which contributes most to educational work and the promotion of new ideas that mean bigger and better business is a systematic and persistent exploitation on the part of those interested in the manufacture of such products.

We find many things in the condition of the tile trade and the outlook for trade in the future that are quite similar to the conditions in the building brick business. For example, just as it is admittedly a psychological time to boost brick for building operations as it never was boosted before, so it also seems the psychological time to systematically exploit drain tile with better chances for returns in the form of an enlarged trade than ever before.

Conveyor Extension Over Gondola Cars.

The Haigh Continuous Forty-Chamber Kiln.

Among the things applying specifically to the tile trade which indicate that now is the time to start a systematic, widespread exploitation, is the general interest on the part of the whole country in the development of better conditions for farm life and for the rural community.

Another thing is the realization that there are other qualities and advantages to the soil and to plant life from tile drainage aside from that of ridding the subsoil of its water early in the season and making it practical to cultivate the land. Air is recognized now as an important element in plant growth and the tiling of land lets air underneath, from where it percolates through the subsoil and the soil and thus materially assists the plant growth. In fact, analytical students of the subject are just now beginning to realize the broader possibilities and greater benefits that come from the use of drainage. As this realization is driven home and as the information is spread broadcast the interest in tile will increase in proportion to the realization of. the values to be had from its use.

No one except the lucky ones in the war baby speculation has prospered more than the farmers, taken as a whole, during the past two years, consequently there is no other class of people in better shape to spend money on such improvements as tile drainage. Moreover, this greater prosperity has begotten new ideals in the younger generation of farmers, new ambitions that seek for better and bigger things. So the time is ripe for pushing drain tile so as to make the future a much bigger thing to the industry and a better thing for the farmers who use it.

Editor The Clay-Worker:

BRICK AND BUILDING NEWS FROM EVANSVILLE AND SOUTHERN INDIANA.

THERE HAS BEEN little or no change in the trade situation with the brick and tile manufacturers of Evansville and southern Indiana during the past month, and business is rather dull. While some of the brick and tile plants are being operated on fair time, others are closed down, and there are a few that have operated little if any during the past seven months. Because of the fact that the factories are running on short time there promises to be a shortage of brick in southern Indiana and southern Illinois before the close of the present year. There is some building going on in southern Indiana, but not like the building in former years, when conditions were normal. Work has started on the new Catholic church at Dale, Spencer county, a few miles east of Evansville. The structure will be built of brick and will be completed late this year or early next year. An Evansville architect has planned six new school buildings for that section. A high school building for Carmi township, White county, Illinois, is among those planned. It will be built of brick, with stone trimmings, and will be two stories high. The building will be 65x105 feet in dimension. The building will be modern in every respect and will cost $50,000. It will be completed late this year. Work is progressing nicely on the high and grade school building at Lynnville, Ind., that will cost over $35,000. The building is of brick with two stories and a basement. A brick school building is being erected at Oliver, Ind., that will cost $18,000. Another school building is in the course of erection at Boonville. Two brick school houses in Union county, Kentucky, a few miles south of Evansville, will be remodeled by having additions built this year. The brick garage and sales room for J. E. Keyser at Mt. Carmel, Ill., will be built this season. The structure will be of brick with two stories and a basement. Work has started on the fine brick country home of James H. Porter, near Broughton, Ill.

Walter C. Holmes filed suit a few days ago in the Spencer County Circuit Court at Rockport, Ind., asking that a receiver be appointed for the Rockport Drain Tile Co., alleging that the assets of the company will not exceed $20,000, and that the company has indebtedness amounting to over $35,000. The plant has been closed down for some time past, and it is alleged that the property, buildings, machinery, implements and tools are suffering damage from disuse and lack of care. The plaintiff demanded judgment for $1,005, money said to be due him as salary and expenses as the manager of the company. James G. Hill, a prominent business man at Rockport, was named receiver for the company by Judge Marshall R. Tweedy, and qualified by filing his bond in the sum of $25,000. It is expected the plant will be sold at receiver's sale, as it is claimed that owing to the construction of the buildings and lack of materials the factory cannot be operated at a profit. The industry is one of the largest in the city of Rockport.

E. H. Hyman, secretary of the Evansville Manufacturers' Association, and secretary of the Evansville sub-division of the Cincinnati regional on war contracts, announces that one of the latest firms to join the sub-division is the Puducah Brick and Tile Co., of Paducah, Ky. A few days ago there was a meeting held at Owensboro, Ky., for the purpose of organizing a county organization of the Evansville sub-division, and among those taking a prominent part in the deliberations of the meeting was J. D. Reeves, of the Owensboro Sewer Pipe Co., of Owensboro. Brick, tile and pottery manufacturers of southern Indiana and western and northern Kentucky expect to get more war contracts since the organization of the Evansville sub-division. Henry C. Kleymeyer, manager of the Standard Brick Manufacturing Co. at Evansville, Ind.; Henry M. Clemens, of the Cannelton Sewer Pipe Co., of Cannelton, Ind., and Aaron M. Weil, president of the Crown Pottery Co., at Evansville, Ind., were active in the organization of the sub-division and expect great good to the manufacturers to come from it.

Henry M. Clemens, former mayor of Cannelton, Ind., and manager of the Cannelton Sewer Pipe Co., appeared before the city council at Cannelton a few nights ago and asked that an ordinance be passed for the purpose of forcing all boys and men ranging in ages from eighteen to sixty to go to work. He said he liked the "war loafer" ordinance passed recently by the city council of Evansville, Ind., and he thought the law proposed for Cannelton should be something like that one. Mr. Clemens has been one of the most active men in Cannelton in war work. He is county fuel administrator of Perry county, and devotes much of his time to this work, for which he receives no pay. He is one of the most patriotic men in Cannelton and has been warmly commended for the work he has done since the United States entered the war.

Brick and tile manufacturers in southern Indiana report that there has been great improvement in the car shortage situation during the past four or five weeks, and they are anticipating no more trouble from this source during the summer and fall months at least. The labor problem still worries the manufacturers in some sections. While most of the plants are running on short time, they report it is hard to get what workmen they need just the same. Many of the manufacturers have employed boys to take the places of the men who have been called to the colors, but the work of these boys, who are in most instances paid big wages, is not satisfactory. There has been some talk of the brick and tile manufacturers employing women and girls. Furniture and other manufacturers at Evansville, Ind., have tried the experiment of employing women and say they make very efficient and painstaking workers.

The plant of the Ridgeville Tile Co., located at Ridgeville, Ind., was destroyed by fire on the afternoon of July 30. The estimated loss is placed at $15,000, with an insurance of $5,500. The plant was the property of A. B. Zimmerman and Edward Morgan.

Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, Ind., and Aaron M. Weil, of the Crown Pottery Co., of the same city, will take a leading and active part in the Fourth Liberty Loan campaign that will start on September 28.

The work of paving the streets of Grayville, Ill., a few miles west of Evansville, Ind., has been progressing slowly for the past several weeks. The delay in the work was due to the fact that the contractors have not been able to get materials on time.

BUILDING NOTES FROM DIXIE LAND.

The BRICK AND CLAY industries in Tennessee and Kentucky are working at as good a capacity as possible. Large requirements, even in war times, makes this imperative. Scarcity of labor and coal restrictions, of course, are problems that confront the brick men. The large clay mines in west Tennessee are mining at a liberal rate and find a large demand for all crockery products and clay manufacturies. Contractors report building in abeyance, yet a number of school, municipal, hospital and warehouses, semi-public buildings and residences and hotel jobs underway are in prospect for the remainder of the year.

At a trustees' sale on August 7, the plant of the South Memphis Brick Co. was disposed of at public sale, with all machinery, tools and appliances, brick on hand, buildings, kilns, steam shovels, locomotives and engines. William D. Kyser and R. B. Lacey were the trustees.

The National Bedding Co., a large mattress factory at Memphis, lost its plant by fire a few days ago. Damage, $75,000. The company was working on a large order of mattresses for the Confederate Reunion at Tulsa, Okla., and lost a great deal of material as well as buildings.

D. U. Crawford and E. J. Thomas, of the Builders' Exchange, Memphis, have been appointed members of the General Contractors' Association of the U. S. At the meeting of the General Contractors in Atlanta, July 15, it was decided that a contractors' association be organized.

Sealed proposals will be received until August 29 on a four-story and basement building at Logan H. Root's Memorial Hospital, city hospital of Little Rock, Ark. The building will be fireproof, steam heat and plumbing. John P. Almond is architect, 1105 Boyle building, Little Rock. Mayor Charles E. Taylor is advertising for bids.

The Royal building on Madison avenue, Memphis, is being remodeled. E. J. Pearson, contractor. An enameled brick front, terra cotta and fire-proofing. The building will be ready for occupancy about September 1.

Construction will start at once on the Memphis Union Stockyards. The yards will cover about forty acres and be built in units. The first unit will be completed in about six weeks at a cost of $75,000.

For contractors to secure steel for the construction of a building, they must make oath that the building will be used for an essential industry. E. J. Thomas, president of the Builders' Exchange, said on his return from a conference with the Government officials in Washington, where the rule was made, that it is thought these conditions may change over night, and that in thirty to ninety days they hope the strained condition on steel may be eliminated.

The Burke Brick and Tile Co., of Fort Smith, Ark., will furnish 500,000 brick to be used in the dormitory at Galloway College, Searcy, Ark. They will also furnish 400,000 brick to be used in the addition to Hendrix College at Conway. T. T. Reddick, of Fort Smith, is the contractor.

DIXIE.

The biggest insurance business of the country now is being carried on by the government in the insurance of soldiers. This is not only a good thing for the soldiers, but it is a good measure of relief from the pension burden that would otherwise come later on.

CROCKERY AND CHINA MAKERS REPORT NEED FOR MATERIALS AND ASK ASSISTANCE OF THE WAR INDUSTRIES BOARD.

Manufacturers of crockery and chinaware, representing over 90 per cent. of the production in this country, in presenting problems connected with the conduct of their industry, have asked assistance of the War Industries Board in connection with securing necessary materials, fuel and transportation. Further conferences will be held.

The Government is interested especially, because it is a heavy purchaser of dishes and other crockery for the various camps and cantonments. Government dormitories for the housing of Government workers, the Navy and Marine Corps, the Emergency Fleet Corporation, and its other activities. An important development of the conference was the expected early standardization of Government requirements along this line.

W. E. Wells, of Newell, W. Va., war service delegate of the manufacturers, stated to the hardware and hand tool section of the War Industries Board, Murray Sargent, chief, that the industry employs about 20,000 persons, 10,000 of whom are women, consumes about 300,000 tons of coal and about 1 per cent. of the gas production annually, and requires for transportation, including both incoming and outgoing material, about eighty cars per day.

Working 65 Per Cent. Capacity.

The industry is working at about 65 per cent. of its maximum production, being restricted by labor shortage. It is using about 50,000 tons of imported English clay and from 35,000 to 40,000 tons of Georgia and Florida clay annually. The American clay is held to be as good as the English, but is gritty, and until the domestic clay is made cleaner the manufacturers say they must continue to use some English clay.

Prior to the war 60 per cent. of the chinaware consumed in this country was imported from England, France and Austria. These imports are cut off, and the increased demand and higher labor costs have brought about conditions in the industry, the manufacturers claim, where assistance is needed from the War Industries Board to protect the Government and the public from an insufficient supply of crockery and chinaware.

THE PRICE.

By Harry Kemp.

I sing the song of an endless peace and the brotherhood of man—
But how will you shape the Kaiser's will to fall in with your plan?
I sing the rights of the lesser folk and the glory of law's advance—
But what will you do with the Teuton that invades and blackens France?
It's only through the love of man that the flags of war are furled—
But how will you manage an emperor who lusts to sway the world?
I've dreamed of the nations' parliament—yes, once I dreamed as you;
But the Kaiser has his dreams as well, and he fights to bring them true.
O, talk as you will of the time gone wrong and the way to set them right—
One thing is sure: Men only win that cause for which they fight!

THE IMPORTANCE OF STRUCTURE IN REFRACTORIES.

THE IMPORTANCE OF STRUCTURE in refractories is, unfortunately, too often neglected. The quality of the raw materials is of prime importance, but it is a well-known fact that the ultimate quality of the product manufactured from the raw material varies considerably according to the structure.

Recent investigations all point more clearly to the necessity of a serious consideration of this phase of the subject and those manufacturers who are keeping pace with the research work that has been done are deriving considerable benefit.

These notes do not deal with the several methods of manufacture. They will be discussed at a later date, particularly the dry press method, which is not so generally used as the other methods.

Briefly, the methods are:

1. Stiff mud auger machine made both repressed and not repressed.
2. Stiff mud plunger machine made repressed and not repressed.
3. Soft mud made.
4. Hand molded, repressed and not repressed.
5. Dry pressed.

When brick are made from a mixture of clays the quality of the product will vary considerably according to the structure, particularly when the clays are of different refractory qualities. This is particularly true of the flint clay brick which are bonded with plastic fire clay. It is unusual to find a bond clay that is as refractory as the flint clay which it bonds. As a result the brick are very apt to fail when the bonding clay fails. This is particularly true when the flint clay is coarsely ground.

When a manufacturer states that he is making a brick from a mixture of 25 per cent. of plastic bond clay and 75 per cent. of flint clay and grog, it will be generally believed that the brick would be of a much better quality than if he was using a mixture composed of a greater amount of plastic and a proportionate decrease in the amount of flint clay. This would depend largely on the structure. For example, the 25 per cent. plastic clay might not be enough to properly hold the flint clay particles and lumps together, particularly if the flint clay was coarsely ground, and there were not sufficient small particles to fill the voids. The product would be unsound, and there would not be sufficient bond to hold the particles, and what bond there was would fuse at a fairly low temperature, and the result would be a failure. The brick made with a greater percentage of bond clay would if part of the flint clay was ground similar to the other mix, be denser as there would be more plastic material to fill the voids and the particles and the lumps of flint clay could cling together longer up to the final point at which the bond clay became soft.

If, however, the materials in the first brick were properly ground and sized, this would not be the case.

The more fine particles of flint clay there were the fewer voids there would be, hence the denser the brick. More important still would be the increase in failing temperature of the plastic bond clay if part of the flint clay was ground very fine and mixed with the lower fusing plastic bond clay. The better sizing and finer grinding, then, would not only make a denser brick which would stand a higher crushing strength, but would also make a brick of which the lowest fusing part (the bond) was of a higher refractory quality than that made without mixing the finely powdered, more refractory flint clay with the less refractory bond clay.

The Bureau of Standards has recently published an interesting and instructive article which gives an idea of what may

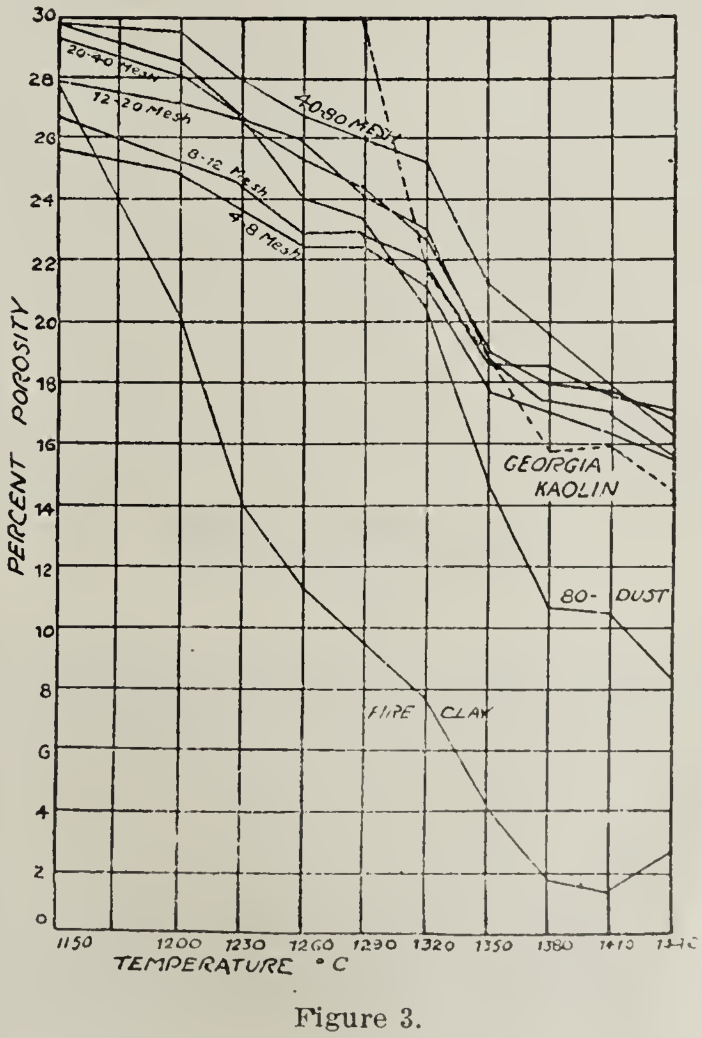


Figure 3.

be expected when various sizes of grog are used in bodies. This technologic paper, No. 104, entitled "The Effect of Size of Grog in Fire Clay Bodies," is by Mr. F. A. Kirkpatrick. The work was done at the Pittsburgh station in the clay products division. This circular can be secured by writing the Superintendent of Documents, Government Printing Office, Washington, D. C.

Twenty-nine figures and several tables are shown in the paper. The following figures cover the important parts of the paper and are of interest in considering the structure of fire brick bodies.

Figure 3 shows the relation between porosity and temperature of burning of clays alone and of bodies containing grog. In each case the bodies contain 50 per cent. of grog (by weight), and each body a different size of grog as follows: Four to 8 mesh, 8 to 12, 12 to 20, 20 to 40, 40 to 80 and 80 to dust. The amount of pore space in a body and the rate of change of this amount in burning are accurate indications of the vitrification temperature range, of the temperature of overburning, and hence the refractoriness of the materials.

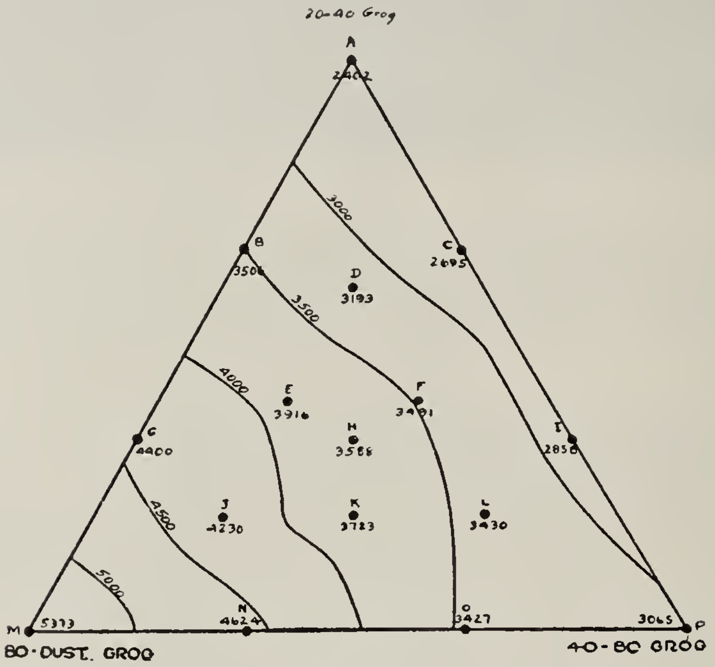


Figure 11.

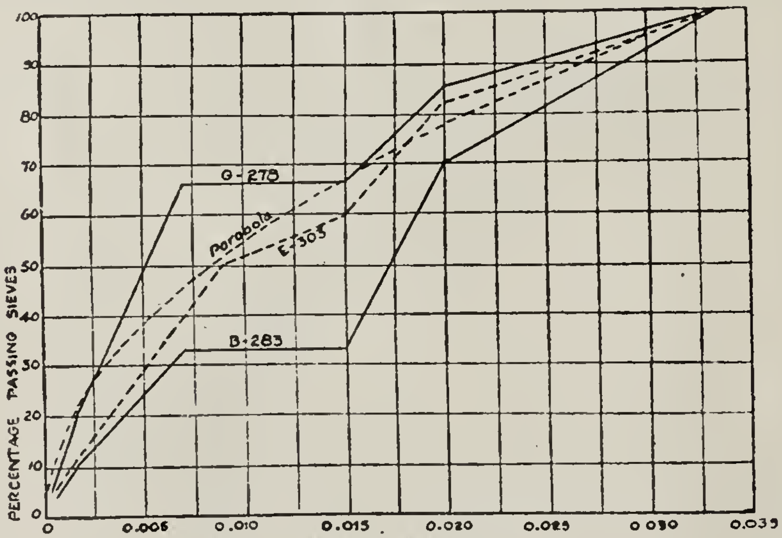


Figure 18.

As the curves show, the bodies possess quite different rates of vitrification.

The porosities of each mixture were determined on specimens drawn out of a burning furnace at definite time intervals as the temperature of the furnace was uniformly increased. The curves plotted from the data obtained show that the refractoriness of the clay grog bodies was much greater than that of fire clay and the effect of overburning was eliminated.

Figure 11 shows that the modulus of rupture or breaking strength of a raw body also varies according to the size of grog and the mixtures of the various sizes of grog.

"If spheres of equal volume are packed symmetrically in a receptacle, two sizes of voids are found between them, and the three sizes of spheres necessary to form the densest mass have diameters in the ratio 1.00:0.41:0.22. Since the actual shape and size of voids in clay grog bodies cannot be determined, the best means at hand for comparison of the effect of mixing different sized particles must be used."

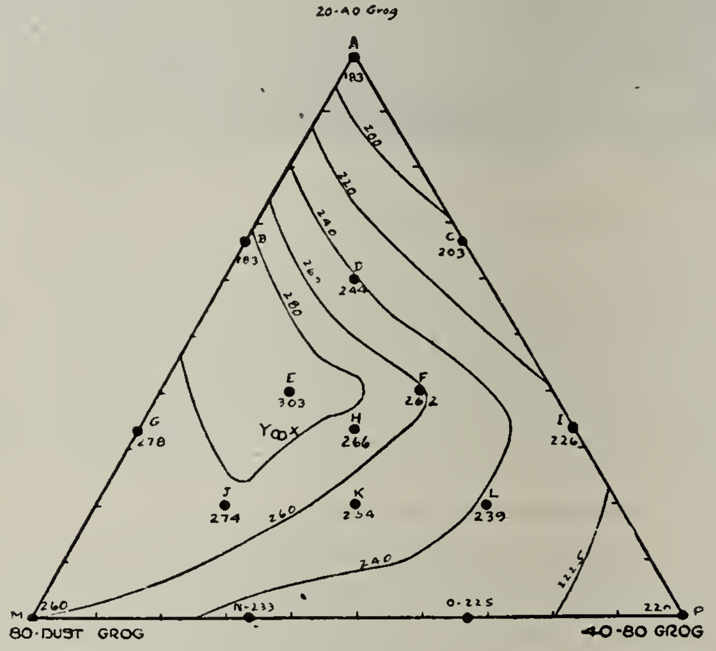


Figure 23.

In the bodies represented in Figure 11 the ratio of sizes of grog approaches the theoretical ratio for spheres. The voids in the 20-40 material are able to contain 80-dust material, but most of the 40-80 grog is too large, separating the larger particles, causing increase in porosity and decrease in strength.

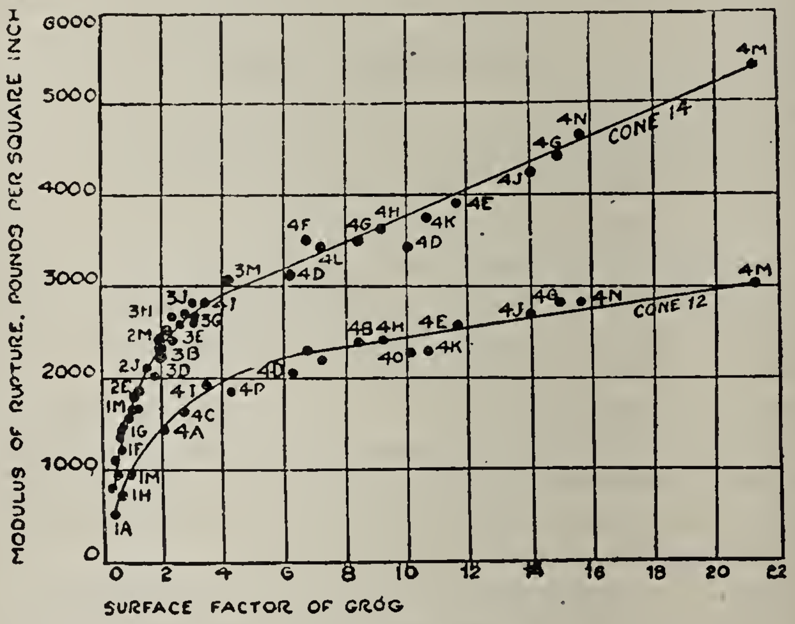


Figure 27.

Figure 18 shows the mechanical analysis curves of grogs from some of the same bodies as shown in Figure 11. A study of results obtained by means of these granular analysis curves is interesting. While the ratio of sizes affords a convenient means of comparison, it should be noted that the average size of each grog portion was used and that each contained particles varying in size from the maximum to the minimum. In Figure 18 is shown analysis curves for the grog of three bodies of Series 4. Absissas represent the percentage passing screens having openings of the size indicated by the ordinates. The line denoted as "parabola" is Fuller's curve of greatest strength and density. The clay portion of the body is not included, since it is constant. In Series 4 the curves for bodies having the greatest strength lie entirely between the full line curves; that is, they follow approximately the course of the parabola. Thus it is seen that the general principle of Fuller's law holds, although the relation is sometimes disturbed by other factors.

Figure 23 shows curves of the relation between grog composition and modulus of rupture of the bodies of Series 4 burned to Cone 14. A glance at this figure shows that the strength of the burned body increases very much as the coarse grog is eliminated. This is of particular interest, as it shows that the strength in the dry state (Figure 11) can not be controlled in the same way as the strength is in the burned state. The method of making the mixture of grogs for a commercial body, then, would depend upon the use to be made of the body.

Figure 27 shows the relation between surface factor and modulus of rupture of bodies burned at Cones 12 and 14. This relation affords an accurate means of judging the strength of such bodies. The paper shows that this relation holds for all the series made and at all temperatures to which the ware was burned.

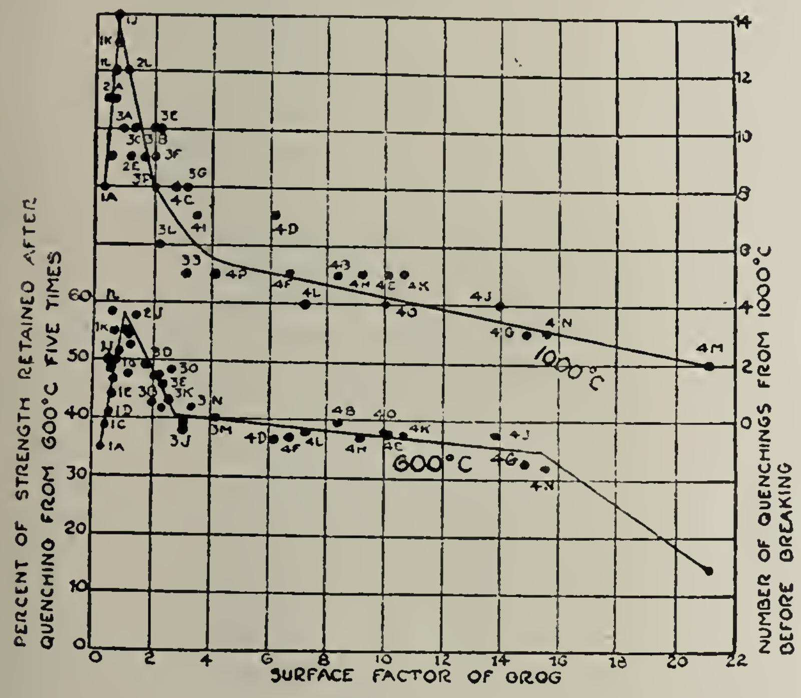


Figure 29.

Figure 29 shows the relation between surface factor and results of quenching tests. As noted the ware was repeatedly heated up to 1,000 degrees C. and plunged into cold water. A study of the curves shows that the smaller the surface factor of the particles the more quenchings the ware will withstand, i. e., the coarser the grog up to a certain limit the more quenchings the body will stand without breaking.

Briefly summarizing the results, it may be said that in regard to grog, aside from other considerations, the following condition is necessary for maximum strength in the raw state. The mixture of sizes must be such that the smaller particles fill the voids between the larger, giving maximum density. The proper proportions may be predicted qualitatively from the ratio of sizes, but can be determined accurately only by experiment. In Series 4 (the series shown) the strongest bodies had the following limits of grog composition: Twenty-five to 66.6%, 20 to 40 grog; 0 to 25%, 40 to 80 grog, and 33.3 to 66.6%, 80 to dust grog.

The control of strength in the burned state proved to be not at all difficult. For all bodies used the modulus of rupture was found to increase with the increase of surface factor. The rate of increase of strength increased with the temperature of burning, due to more rapid rate of solution of the fine particles at the higher temperatures. No relation was found between strength in the raw state and in the burned state. In the quenching tests, mixtures of the larger sizes of grog gave the more resistant bodies.

It is not necessary to grind and classify grogs and remix them in order to obtain mixtures of any certain granulometric analysis. This can and is being done within reasonable margins by control of the grinding speed of pans, size of plates, etc. The important point is that it is well worth while paying considerable attention to this sizing of the raw materials. A good deal can be done to keep the product uniform by simple screen analysis of the materials when ready for making into ware after having been ground.

THE 1917 BUILDING RECORD.

Details of the record of 1917 building operations which are now available through press bulletins of the U. S. Geological Survey give a pretty good idea of war's effect on the trend of building. Among 60 cities of the country taken for analysis 48 showed decreases while 12 showed an increase in building operations.

The dozen cities in which building operations increased, as compared to 1916, were: Waterbury, Conn.; Akron, Ohio; Atlanta, Ga.; Chester, Pa.; Denver, Colo.; El Paso, Tex.; Hartford, Conn.; Omaha, Neb.; Sioux City, Iowa; Youngstown, Ohio. The causes for the increases were local in each case, being due to war activities of one kind and another in the main.

Taking 145 cities the total building operations reported for 1917 amounted to $687,415,605, as compared to a little more than a billion dollars for the same cities in 1916. There is some comfort in the situation for the clayworking industry, however, in that the larger part of the building was of brick.

Among the cities reporting 129 stated operations by classes of structures. The total cost of buildings in these 129 cities was $632,694,952. The part of this expended on wooden buildings was $168,290,958, or 27 percent; on brick and hollow tile buildings, $322,147,677, or 51 percent; on stone buildings, $4,589,168, or less than one percent; on concrete buildings, $66,511,300, or 11 percent; steel skeleton buildings $58,440,361, or 9 percent. So the brick industry not only led the list, but lost less comparatively than any other building material. This is one of the things to be thankful for, and to cheer up about.

And, another cheerful thing is in the prospects that instead of losing in the future there will be a steady gain in the call for brick and hollow tile—more of it will be used in proportion to the building operations carried on. And it is easily apparent that there will be enough of the call right along that the main problem will be how to get enough made to supply the actual needs.

BRICK BUILDING FIFTY YEARS AGO.

The Courier-Journal, of Louisville, Ky., as a sort of jubilee celebration, has been reviewing in a special department set apart for that purpose interesting happenings of fifty years ago. Appearing in the review of Louisville's industrial and commercial affairs for the year 1844 is the following:

"The first brick house ever built in Louisville was erected on Market street, between Fifth and Sixth, in 1789, the owner being a Mr. Kaye. It is to be supposed that bricks for building purposes were scarce in those days, and only the very wealthy could afford brick houses. In 1844, however, bricks had become a common commodity, there being eight brick yards in the city actively engaged in the manufacture of bricks."

NATIONAL FEDERATION OF BUILDING INDUSTRIES.

FOLLOWING a preliminary meeting in New York in June, there gathered at Atlantic City July 15-16 a great convention of people interested in different branches of the building industry. The meeting was called under the auspices of the National Chamber of Commerce, and there was represented at the gathering more than a hundred different organizations in the building and building material trades, and over fifty individual concerns. Finally, as a result of the two days' conference, articles of association were drawn up and adopted, and a provisional board of nine was elected to establish headquarters in Washington and complete the work of federating the different building interests into a central organization.

Allen Walker, of the Chamber of Commerce of the United States, was elected chairman of the provisional organization, and E. A. Roberts, secretary.

The Provisional Executive Board is made up of the following:

W. S. Dickey, Kansas City, Mo., clay products.

B. F. Affleck, Chicago, cement products.

John R. Wiggins, Philadelphia, National Association Builders Exchanges.

John H. Kaul, Birmingham, Ala., yellow pine.

A. M. Maddock, Trenton, N. J., Sanitary Potters' Association.

Charles Gompertz, San Francisco, Building Industries Association of California.

John A. Kling, Cleveland, builders' supplies.

W. L. Clause, Pittsburgh, plate glass.

Articles of Association.

The following articles of association were adopted:

The undersigned organizations, each through its duly authorized representative, hereby agree to and establish the following articles of association:

1. A voluntary association to co-operate with the United States Government in carrying on the war, to co-ordinate industrial activities and to conserve resources, shall be and now is created, to be known as the National Federation of Building Industries, referred to hereinafter as the Federation.

2. The Federation shall be managed and its policies devised and carried out by a body of delegates to be known as the Building Industries War Service Committee, referred to hereinafter as the War Service Committee.

3. Any association of building material manufacturers or dealers, or of contractors engaged in building, or of architects or engineers, or any association of other persons, firms or corporations related to building, may become a member of the Federation and be represented in the War Service Committee upon the following conditions:

(a) Members may be either national associations or regional associations.

(b) A national association is an association composed of members whose places of business are located or whose products are distributed at large over the United States.

(c) A regional association is an association composed of members whose places of business are located and whose products are distributed principally in a single city, district, locality, state or region.

(d) Each national association shall be entitled to three delegates and three votes in the War Service Committee, and each regional association one delegate and one vote in such committee. If less than three delegates are present from a national association they may cast the entire vote of such association.

(e) Each national association shall contribute $300, and each regional association $100, to the organization fund, in both cases payable ten days after notice of election and there shall be no dues prior to January 1, 1919.

(f) The admission and classification of any association shall be made by the Committee on Credentials, to be appointed from the War Service Committee by the President. The War Service Committee may review the action of this committee.

(g) At least one delegate from each member association present at any meeting of the War Service Committee shall be some other person than a paid employe of such member association.

4. Any member of a member association, individual, firm or corporation engaged in any business that has no association may become a sustaining member of the Federation upon payment of $100 a year and may attend the meetings of the War Service Committee, take part in such meetings, and receive all published matter of the association, but shall have no vote as a sustaining member.

5. The War Service Committee shall elect at each annual meeting three members of the Executive Board to serve three years without salary. At the first election, nine members of the Executive Board shall be elected and the tenures so arranged by lot that the terms of three shall expire each year. The Executive Board shall carry on its business under such rules as it may adopt.

Vacancies may be filled by the Executive Board until the next regular or special meeting of the War Service Committee.

Vacancies may be created by a two-thirds vote at any regular meeting of the War Service Committee and such vacancy may be filled by vote of the committee.

6. The Executive Board shall elect annually by majority vote to serve one year, a president of the War Service Committee, who shall be chairman of the Executive Board, and shall also elect a vice-president and treasurer of the War Service Committee, and these officers shall serve without salary.

7. The Executive Board shall appoint, to serve during their pleasure, an assistant to the president and fix his compensation. He shall be the staff representative of the president and of the War Service Committee. Subject to the approval of the Executive Board, or of such committee as they may establish for administrative supervision, he shall provide, maintain and conduct offices, facilities and staff and shall cause the board or its committees to be provided aid in their inquiries and negotiations and to be furnished reports upon subjects with which they are to deal, and staff service in framing and declaring policies. He shall cause members of the federated bodies to be provided with means and advice for prompt consideration of matters which they desire to have considered by the Executive Board, or for prompt action insofar as such matters involve precedents already adopted by the board, and he shall in general be charged with the promotion of the aims of the organization and the co-ordination of its constituents for results.

8. The War Service Committee shall meet on the first Monday in November, 1918, and quarterly thereafter, and not less than ten days' notice shall be given of the place and hour of each such meeting. One of such meetings shall be designated as the annual meeting, and the Executive Board may arrange for such larger attendance of representatives of the member associations as they deem fit, without, however, changing the ratio of voting as hereinbefore provided. The Executive Board may call special meetings of the War Service Committee at any time or place upon not less than ten days' notice, and a special meeting of the War Service Committee shall be called on written request of twenty delegates. A quorum of the War Service Committee shall be twenty-five.

9. The Executive Board shall maintain facilities for continuous communication with the individual members of the several trades and occupations through the member associations and shall provide that the board shall at all times know what are the practical problems and needs in the several regions, that the members of the Federation everywhere may know accurately and promptly what the War Service Committee is doing and prepared to do, and that all concerned may have convenient means of co-operation for the common end.

10. The War Service Committee may pass by-laws necessary and proper to carry these Articles of Association into effect, including power to fix the dues.

11. These Articles of Association may be amended by the War Service Committee by a two-thirds vote of those present at a regular or special meeting, notice of proposed change being given in writing twenty days before such meeting to every member of the War Service Committee.

The general idea and actuating thoughts responsible for the gathering and its result were nicely set forth early in the convention by the enthusiastic agreement to send to the President the following message:

"Representatives of the various branches of the building industry, gathered from all parts of the country at the summons of the Chamber of Commerce of the United States, send you fervent good wishes for the completion of the task of bestowing upon the world a permanent peace.

"We are glad to bear our share of the burden of war for liberty and shall cheerfully accept whatever sacrifices and readjustments may be essential to its vigorous prosecution.

"The Government has perplexing problems in the endeavor to restrict construction activities where necessary, while keeping employed labor and materials not needed for war purposes.

"To solve that problem successfully in an industry of such magnitude, such ramifications and such large influence on general trade and prosperity will immeasurably strengthen the nation for the support of taxation and loans which must continue as long as the war lasts.

"We are assembled to devise an instrumentality through which the building industry may give united and effective aid in solving that problem.

"We pledge you and those officially associated with you the fullest co-operation within our power."

TO SAVE FUEL IN INDUSTRIAL FURNACES

THE UNITED STATES Fuel Administration has completed the organization of the Industrial Furnace Section, Bureau of Conservation, to handle fuel conservation in all furnaces with the exception of those operated for the production of power, heat and light. This includes those plants using fuel for direct heat, such as the clay products industries.

This section is in charge of an experienced engineer who has under his immediate supervision thirteen districts, comprised of thirty-one states, covering the territory in which industrial furnaces are used. Each district has a local head who has in his organization an advisory board and a corps of inspecting engineers.

The newly appointed district chiefs met at the Fuel Administration building July 29th for a conference with A. F. Greaves-Walker, the chief of the section. The district chief made a report based on a preliminary survey of each district. Their conservative estimates of probable annual savings was 3,000,000 tons of coal.

A standard questionnaire is being furnished each plant owner in advance of the inspection, which he will fill out and hold for the inspector. The rating of each plant will be based upon the efficiency with which fuel is used. All wasteful burning processes will be taken into account; but an opportunity for correcting wasteful conditions will be given before inspection. Recommendations will accompany each questionaire, several items of which will apply to each and every plant, and if followed will improve conditions materially. The inspecting engineer will be in a position to make further recommendations to each owner after inspecting his plant.

The clay products, lime, cement and glass industries will be inspected first.

It is considered important that all existing fuel conservation committees, committees of chambers of commerce and national defense, manufacturers' associations and other bodies engaged in conservation work within the territory of any district shall be continued in full force and that the co-operation of such organizations shall be obtained.

By appealing to the patriotism of the furnace owner, at the same time presenting tangible facts which show him a way of saving money for himself and fuel for the nation's use in the prosecution of the war, little trouble is expected in bringing about conservation of fuel through the proper regulation and operation of all industrial furnaces.

POTTERS GET WAGE ADVANCE.

Seven thousand general ware pottery workers in the United States and Canada were granted a wage increase ranging from 20 to 45 per cent. over the 1915 scale, by the United States Potters' Association, in convention July 27. The raise was effective during the first full pay in August. The action was taken by the manufacturers following the submission of a petition by the National Brotherhood of Operative Potters. The present agreement with the manufacturers does not expire until October 1, 1919.

EXPANSION OF WAR INDUSTRIES INCREASES FUEL DEMANDS.

THE DEMAND FOR FUEL, on the part of the war-making branches of the government and the war industries, is growing by leaps and bounds. Every increase in the war-making efficiency of the nation is forcing a corresponding increase in the fuel demand. Estimates of the coal consumption for the year, which were judged high in April, are now proving inadequate.

It becomes increasingly apparent that despite the phenomenal increase in the rate of production at the mines, despite the splendid effort of the mines and miners under pressure from the Fuel Administration, the strictest fuel economy must be enforced if the country is to escape a serious coal shortage next winter. Every means of coal conservation must be observed, and every wasteful and unnecessary use of coal must be eliminated.

Almost daily applications are coming to the United States Fuel Administration from War Industries for allotments of coal in addition to those made at the beginning of the coal year. Some are from new plants authorized by the War Industries Board, not known to the Fuel Administration at the beginning of the year.

The requirements for these plants are in addition to the original allotments. Other demands are from plants already on the Preferred List of war industries, for increased allowances because of enlargements and extensions to original plants, made since the Fuel Administration compiled its estimates of consumption.

The increased demand for coal for the navy reached almost one hundred percent in July. Whereas three and a half million tons was allotted to the Navy in April, the requirements by the middle of July had reached a basis of six million tons. By the end of the calendar year 1919, it is estimated that approximately eight million tons will be required to cover these demands.

With the launching of new ships, the requirements of the Shipping Board have likewise grown beyond all expectation. When the annual allotment was made, at the first of April, ten million tons was assigned for the purposes of the Shipping Board. The actual requirements as demonstrated by experience, and as a result of the phenomenal results being achieved by the Shipping Board, now place the figure at thirteen million tons.

So also, coal for bunkering purposes, at first estimated at thirteen and a half million tons, has grown in demand until present calculations call for twenty-one million tons.

New industries, not in operation at the beginning of the coal year, are now running full tilt or are about to start. From these come demands for coal of consequential proportions. A few are here enumerated, some of which are new plants, or additions to existing plants, made necessary by the enormously increased demands for war manufacture. To mention some of these new demands:

Youngstown Sheet & Tube Co., additional requirements, 45,000 tons by-product coal per month; Cambria Steel Co., 27,000 additional tons by-product coal per month; The Edgewood Arsenal, 30,000 tons steam coal per month; The Perryville Powder Plant, 15,000 tons steam coal per month; Worth Steel Co., 6,000 tons producer gas and steam coal per month. These new requirements alone represent an annual consumption of nearly a million and a half tons.

Aside from the increased requirements here shown, originating from new or enlarged plants, many old plants, rated at the beginning of the coal year for marked increases of allowance over the consumption of 1917, are now demanding still more coal. Practically all the steel plants and furnaces are running on full time, twenty-four hours per day. There are no suspensions of operations save for repairs and overhauling of plants. In some instances the yearly coal requirements were underestimated. In many others, enlarged production, under increased efficiency has created a demand for additional coal. Invariably increased steel production calls for increased coal production, demanding about five tons of coal for each ton of steel produced.

The source of supply for the particular new coal requirements cited, is within a limited coal area. The extra allowances and demands there made, call for coal from New River and Pocahontas low volatile fields of West Virginia; the low volatile fields of Pennsylvania and Maryland; and the high volatile fields of West Virginia, Pennsylvania and Kentucky. These fields produce the grades of coal especially needed for the war work. And it is from these same fields—with the exception of Kentucky—that the enormous calls of New England and the Atlantic States for coal for war use, must be answered.

The fields named are working at top-notch speed when accorded full car supply. But, unfortunately, they are the fields where transportation service is most difficult to secure. Not only does the eastern manufacturing section rely entirely upon the fields named for their tremendous coal supply, but by-product plants everywhere, and gas plants, generally, derive their coal supply from this limited territory. The mines within this territory were, on July 27th, more than fourteen million tons short of their scheduled output, estimated by the Fuel Administration as necessary to meet its fuel needs of the country.

The U. S. Fuel Administration faces the difficulty of meeting greatly increased demands for coal, not from the nation's big coal pile, but from a much smaller pile, representing the output within a small area. The war necessities must be cared for by coal from these fields and non-war industries will be given coal from them only after the war plants designated by the War Industries Board for preference are supplied.

Waste heat means waste fuel, so save and use it wherever you can.

CHANGE IN INTERNATIONALS ORGANIZATION.

Mortimer Silverman, general manager of the International Clay Machinery Co., Dayton, Ohio, for several years past, retired from active management of the company's affairs July 1.

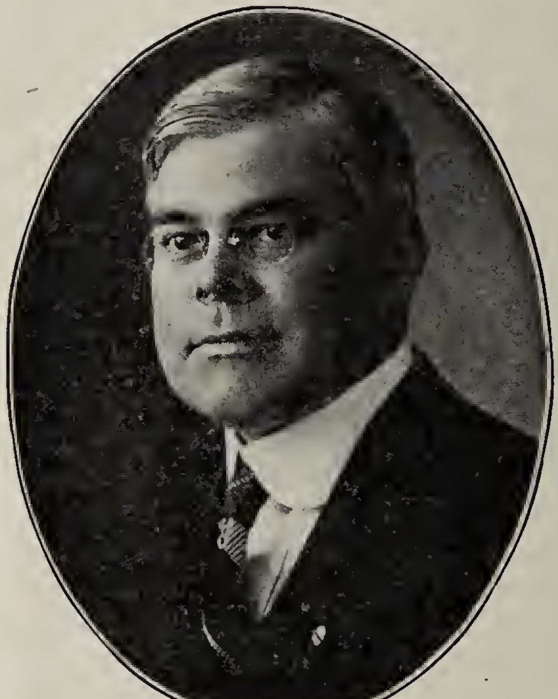
Mr. Silverman is not entirely severing his connection with the company, but the condition of his health is such that it necessitates a less active part. For the time being Mr. Silverman will look after International's and his own private interests in Boston.

He has made many friends in the industry who will regret exceedingly his decison to sever active relations with the clay-working fraternity.

His successor, in active management of the company's affairs, is Mr. H. E. Stocker, former production manager of the Fort Wayne works of the General Electric Co.

Mr. Stocker will not only fill the general managership but the vice-presidency as well. Mr. Stocker has been in the service of the General Electric Co. for twenty-three years, coming in as an office boy, working up through his unaided efforts to production manager of the large Fort Wayne works.

Mortimer Silverman Former General Manager International Clay Machinery Company.



H. E. Stocker General Manager International Clay Machinery Co., Dayton, Ohio.

It is a well deserved tribute to Mr. Stocker that as production manager at Fort Wayne he more than tripled the ouput of the plant in several years.

Mr. Stocker enters the industry with a feeling of optimism with regard to the future of clay products.

Mr. R. H. McElroy will remain with the company as sales and assistant general manager, also will Mr. Joseph Cite as chief engineer and Mr. George Vater as associate chief engineer.

Mr. Stocker has brought with him Mr. W. S. Smith, formerly supervisor of stock at the Fort Wayne plant of the General Electric Co., to act as purchasing agent, as well as Mr. Howard Marvin, formerly general manager of Boyts & Porter Co., of Connellsville, Pa., as general superintendent for International.

International now flies the flag of the emergency fleet, being well under way in the manufacture of marine engines for the fleet and transports.

Delivery on their contract for 75m|m high explosive shells will start this month.

These are busy days for the flower pot as well as for jugs and jars.

MACHINERY PROSPECTS IN FRANCE.

A FRAME STRUCTURE with a clay tile roof and a brick or stone foundation is not by any means a brick man's ideal of a proper home, nor has it much to commend it in any way except the foundation and the roof

"But what," you may ask, "has that to do with machinery prospects in France?"

What it has to do with it is this: A report in hand from Vice Consul Azel D. Beeler, of Bordeaux, France, in speaking of the reconstruction to come, says: "According to reports about the work already under way in this line, it is understood that the buildings in the devastated regions will be frame structures, with clay tile roofs, and brick or stone foundations; that is what the sample exhibition houses shown in Bordeaux indicate."

What it indicates to the observant onlooker here is that the lumber folks have been getting on the job early, and expect to stay on the job to promote business in lumber when the great day of reconstruction comes. Nor can one blame them, because enterprise is not a thing to be censured for—it is rather a thing to imitate, or, better yet, to improve upon. It indicates finally, that there is mission work to be done in France in the interest of both brick machinery and better building.

The old countries as a rule turn naturally to the more permanent building material, and France is no exception to this rule. It is a country in which the manufacture of brick and tile is quite extensive, and its use quite general. About the only thing which could lead to an extensive use of lumber as a substitute for brick would be the hope of saving time and money in the work of restoration.

Whether any appreciable saving in either time or money can be effected seems to depend some upon the enterprise and preparation of brick machinery people. Given plenty of brick making machinery promptly the French folks should be able to make as rapid progress in reconstructing with brick as with lumber, and when they once got the work done it would be done.

The two more important elements which enter are time and labor. In the matter of cost, from the range of lumber prices today, to which must be added high freight rates, there is not much chance for any appreciable saving in first cost over brick by using lumber. This can probably be easily demonstrated, which will leave as the dominant factors, time and labor.

It is well to bear in mind in this connection that while the French have been progressive and know something of the use of machinery, neither they nor any of the old countries have gone in so extensively for the labor saving element in machinery as we have here. So the big chance, the chance to save labor, time and money is through the adoption of American methods and machines, altered of course to fit in with the French needs. The introduction of this element early enough in the scheme for restoration should prove a service to the French people as well as a good stroke of business for American machinery manufacturers.

The Bureau of Foreign and Domestic Commerce at Washington, or any of the district offices, will gladly assist those interested in the machinery trade prospects in France, and our relations with that country are such that the establishing of connections and the getting of a favorable hearing should be a very easy matter.

Let us get brick machinery, and the "Build With Brick" slogan into France so that they may not make the mistake of turning to hastily constructed flimsy structures, but may rebuild permanently and satisfactorily with the best building material on earth.

THE CHICAGO SITUATION.

REAL ESTATE MEN and building owners and agents who have been contending that Chicago was "overbuilt" and that no new construction in the way of residences and possibly office buildings would be necessary for a long time to come, have been sharply challenged by City Building Commissioner Henry Bostrom, who takes issue with them flatfootedly. His report of building operations in the city of Chicago for the first half of the current year shows a falling off of about 60 percent, as compared with the same period of 1917.

In his report, Mr. Bostrom says:

"A careful survey in this direction will prove that the town is not overbuilt as to housing facilities for its population, but on the other hand, there should be erected more buildings, and the ones that are untenanted on account of decay and bad housing conditions should be removed. The depreciation of buildings in general has been the cause of lowering the value of the property. They should be removed and replaced by newer and more modern structures. The same applies to manufacturing plants."

This coming from the official head of the building department of the city, falls with the force of expert testimony, and may be calculated to lend some cheer to the hearts of building material men, builders and architects. In normal times such a pronouncement would probably have very tangible results. Under existing inevitable circumstances, however, how much building follows during the next five months will depend almost equally upon Uncle Sam and the money market. Should there be a period of reasonably easy money, and should the fuel administration find it practicable to be at all indulgent with the manufacturers of building materials, especially with the clay products manufacturers, it is entirely possible that a rejuvenation (at least a mild one) may be noted. When it is recalled, however, that the tremendous falling off from the activities of last year, is not in comparison with a normal period of building in Chicago, but that the year 1917—and indeed the year 1916 before it was decidedly subnormal, it will be seen that even a goodly jump now would by no means set new records in the building world here. That the building commissioner is right there can be no doubt. All over the city efforts are being made by many owners and agents to bring about a general increase in rentals charged for dwellings. It can not be denied that in view of greatly increased cost of fuel and labor, some increase undoubtedly is reasonable, but in this as in all unregulated lines, the ground for a reasonable increase in price is too often made the excuse for unreasonable and harmful profiteering.

Uncertainty as to future Federal tax provision is held by some to play a part in making long term real estate loans harder to negotiate than usual.

SCRIP.

GROWTH OF GANISTER INDUSTRY.

The demand for ganister, or quartzite, used in making silica brick, continued its remarkable growth in 1917. According to statistics compiled under the direction of G. F. Loughlin of the U. S. Geological Survey the total quantity of ganister sold in 1917 amounted to 1,295,851 net tons, valued at $1,350,798, an average price of $1.04 a ton. This was an increase of 435,895 tons, or about 51 per cent. in quantity, or 155 per cent. in value compared with 1916, when the average price was only 62 cents a ton. The increase in 1916 over 1915 was 50 per cent. in quantity and 58 per cent. in value. The marked advance in price in 1917 was due mainly to increased cost of production. Pennsylvania with twenty-six plants continued to furnish the bulk of the output in 1917—1,003,623 net tons, valued at $1.11 a ton.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Electrically Separating Clay from Water.

Editor The Clay-Worker:

Will you kindly tell us whether there is anyone in the United States making or selling machines for electrically separating clay from water and thus taking the place of the filter press. This is known as the "Osmose" process and is described in the "Transactions of the English Ceramic Society," by Dr. W. R. Ormandy.

We should be very much obliged to have the address of the American agent if there is one, also to have your opinion on whether the process is well adapted for a very fine plastic clay used in making stoneware.

Yours truly,
JAMES W. FOLEY & CO.

New Brunswick, Canada.

(The process is not used in this country, although it might be employed where electric power can be obtained very cheaply. At the present time it is very doubtful whether it can compete with the filter presses, and for this reason it has not yet found application. The process depends upon the fact that clay in suspension is attracted to the positive electrode when using direct current. If this electrode is made in the form of a large wheel or of an endless metallic band, the clay can be caused to form a layer on the surface which then is scraped off as the mechanism moves out of the liquid. It is the opinion of experts that it would not be advisable to consider such an installation at the present time. The procses is described in detail in "Technologic Paper No. 53," issued by the Bureau of Standards, Washington, D. C.—Editor.)

A Need for Co-operation in Standardizing the Sizes of Face and Common Brick.

Dear Mr. Randall:

I am in receipt of your communication of August 1st regarding the size for common brick as adopted at your last national convention, and which we note is the same as previously adopted for face brick.

It is a peculiar fact that the brick interest seems to be the only one in this country where there is absolutely no co-operation between the manufacturers. An important matter such as standard size can be adopted, and yet with the exception of a very few, no attention is paid to the same.

Regarding your statement that as a matter of course a few of the manufacturers would naturally adopt the smaller size if only for the sake of economy, this may possibly be true, but of course you realize that in the selling end a competitor would use this as an argument against their brick for it would take more to lay a square foot of wall surface than would their competitors and on large operations this may mean a considerable item and hence the loss of a contract.

The writer knows from experience that this has been often done, even in enameled brick. If you will take the product of various manufacturers of enameled brick you will find that the sizes vary considerably. It is nonsensical we know, but the fact remains.

Aside from this condition, as I previously called to your attention, the trouble really arises after the brick are in a building, due to the inability of the masons in properly bonding in the larger size face or enameled brick with the common brick backing, or sometimes this condition is reversed, and the common brick run very much larger than the face or enameled brick.

Under these conditions, do you not think that you would be doing the industry a whole lot of good if you would take the matter up energetically as only one in your position could, and even if by means of a circular, find out how many of the manufacturers have adopted the new standard, both in the face and common brick line, and if not, why?

Under present day conditions every penny saved is a penny gained. There is not a single one of the face brick concerns that could afford to overlook an opportunity to better themselves.

I am simply making this suggestion to you for what it is worth, but believe that you could do the trade a great service if you could get a standard size uniformly adopted.

Yours sincerely,
C. A. GARDNER.
General Sales Manager American Enameled Brick & Tile Co.

Filling War Orders for Brick in England.

Editor The Clay-Worker:

In spite of the submarines, I am glad to say I am receiving The Clay-Worker regularly. It is full of useful information and a source of much pleasure to me. I read with special interest the article in your May issue on "Girl Brickmakers in Great Britain." The letter from your friend serving in the splendid American army, "Somewhere in England" gave a very excellent description of the brick work which he had seen here. I wish more architects like him who love to see the natural and beautiful effects to be obtained in using artistic brick might visit us.

The University of Munitions in October last secured my release from the army after two years' service, in order that I should take charge of the Eaglesfield Brick Works, Ltd., which had been standing idle for some years, owing to lime trouble. We have overcome the troublesome lime business and are now turning out a thundering good brick as fast as we can from a 30,000 per day machine. All the brick made in this district now busy on a munition works job requiring 20,000,000. go to the large shipbuilding yards, iron works, etc. We are

I claim to have been the pioneer brickmaker to introduce the hand-molded sand faced brick into the North of England. This I feel sure is the class of brick to which your friend refers. I would be delighted to meet him should he come north, and show him some fine examples of domestic and public work. Soon after the introduction of this brick into the North Country we were pulled out of the place for them. To relieve the congestion of orders, we put down an Anglo-American soft mud machine, made by T. C. Fawcett & Co., Ltd., of Leeds, Yorkshire. This brick, however, did not meet with a very great reception. Its appearance was not to be compared with the old-fashioned hand-molded brick, and although we found ready markets it had to take a back seat.

Now, regarding the article on "Girl Brickmakers," this fits my present position exceedingly well. At the present time at least 60 per cent. of my work-people are girls and women, the remainder being boys and discharged soldiers. I have not one fit man of military age about the works. The girls, I consider, are doing well. They are employed around the machines, setting into kilns, drawing, and in fact any work that comes along. We have quite recently introduced a Mat-thews gravity roller conveyor, and we look for big things from this, especially in easing the work of the girls.

We are also putting in an endless rope hauling arrangement to carry the brick from drying floors to kilns. This is another labor-saving improvement we find necessary, to assist us to get over the difficulties we are now experiencing.

Now, regarding reports received through your consular service respecting British markets for American brick machinery, I by no means wish to discourage in any way makers of brick machines in the U. S. A. I will only say that there are scores of well equipped brick works closed down here at the present time, but on the conclusion of the war will open out with renewed vigor. Also I feel certain we have sufficient old established and reliable firms making brick machinery whom I know are preparing for the busy times to come.

Most brick machine makers here are old at the game of brickmaking, and they will be ready to meet any demand made upon them by us in this country. In matters respecting labor-saving machines, our engineers have in the past been very lackadaisical, but there is already many signs of improvements in this direction.

Some years ago when His Majesty King George, then Prince of Wales, returned from a tour around the world, in an important speech, said "Wake up, England," I think we did arouse a bit and rub our eyes, but dosed off again. It has taken this war to thoroughly arouse us, but I can assure you that the brick industries, as all other industries, are now very wide awake.

The report of Consul J. M. McCumm, from Glasgow, Scotland, I am interested when he states that "There is a tendency to use more machinery to replace hand work in the Glasgow district." Although this may be quite true at the present time, the reason is principally because of shortage of labor and the great demand for refractory brick. A few weeks ago I visited the largest refractory brick works in Scotland, near to Glasgow, and there saw machines turning out brick which, previous to the war, were molded by hand. The managing director pointed out to me various defects of this brick not to be found in hand-molded, at the same time saying although he considered he had put in the best machines possible, he was particularly anxious to get back to the hand molding. I suggested to him to put in a soft mud machine, feeling certain it would make a better brick than the machines he used. He did not agree with me. They, at any rate—and their goods are sent to all corners of the globe—intend to go back to hand molding at the earliest possible moment.

The report from Consul C. M. Hitch, Nottingham, England, is, I am afraid, misleading where he says, "Out of twenty-six brick plants in that district, one only is working," and goes on to say that "In normal times 15,000,000 brick were made per week, but only one-third are now being turned out." This sounds like the one plant which is working is turning out 5,000,000 per week. I thought of rushing off to see this wonderful brick plant, but on second thought came to the conclusion the figures given might be a misprint.

Improved Methods of Drying and Burning Needed.

Now what we want here more than machinery are a perfect dryer and kiln. We have some excellent kilns in this country, and some are burned on economical lines, but the question of reducing cost of getting brick in and out is still a matter which remains unsolved. What I should like to see is brick delivered on cars at machine, dried, burned and delivered on the same cars to the loading truck, especially so in the case of wire cuts and soft mud brick. One firm at least, Didier March Co., of Perth Amboy, seems to have gone a fair way toward attaining this desirable end of saving the cost of handling, but I am wondering about the cost of this installation. Anyhow, anyone who could come along here with a dryer and burning arrangement of this kind will, I am sure, be welcomed by many. I consider the trade should receive some Government assistance, especially financial, to go into this kiln question thoroughly. It has been left to private enterprise too long, resulting no doubt in improvements being made, but on the other hand, great financial loss in many cases of those experimenting.

The article, "Brick, the Building Material of the Ages," by A. F. Rosenheim, was a great treat. Whenever I have heard of brick being run down I have always reminded the enemy of brick of the Tower of Babel, and that sensible man Nebuchadnezzar.

I am hoping some day, soon after the war, to be able to pay a visit to the U. S., in order to view some of your really up-to-date plants.

By the way, I am somewhat impressed by your methods of advertising, but is the Claypool Hotel, which was your convention headquarters, built of brick?

I am afraid I will have wearied you with this somewhat long epistle, but when I get on the subject of brick I am difficult to stop, but hoping you would bear with me, I have felt encouraged to go on. Yours sincerely,

Eaglescliffe, England. JOSEPH WRAY.

CLAY FOR BRICKMAKING.

The Wealth That Lines the Shores of the Hudson River.

Magnificent and inspiring as the scenery is along the towering banks of the lordly Hudson, it isn't anywhere near as much of a money maker as the lowly brick which are made along the shores of that favored stream. In the ten years past some 11,390,110,000 brick, valued at $60,407,258, have been fashioned out of the clay close to the water's edge. These brick, if laid flat, would make a sidewalk that would reach around the world. And it is estimated that there is still enough clay left on the banks of the Hudson to make 1,200,000,000 brick a year for the next fifty years.

This stratum of clay extends along both sides of the Hudson from New York to Cohoes, above Troy, and takes in ten counties, one of them in New Jersey. It is the greatest brickmaking district in all the world. For a century the industry has thrived, and, strangely enough, the method of manufacture has changed hardly any in the lapse of years.

It was in 1817 when the industry began to thrive. James Woods, an Englishman, had learned the trade of brickmaking in his native land and was attracted to Haverstraw, up the west bank of the river a few miles from New York. The vast quantities of fine brick clay there and the abundance of wood for fuel appealed to him, and he started the first successful brickyard in Rockland county. To Woods is given the credit for discovering that coal dust made a fine ingredient for good brick. He also invented tempering, mixing and molding machines, and these, but little modified, are used even in these time of new appliances for all forms of the industry.—New York World.

NOTHING QUITE AS GOOD.

The Irish soldier was home on furlough and proudly exhibiting to the family and neighbors his arms—his gun and bayonet and ammunition, and all the accoutrement appertaining thereto. All were enthusiastic except the old father, who, though he approved, was mild in his praise.

"And isn't it a fine layout it is?" asked the son.

"Yis," replied the old man, "but wasn't there toimes whin you longed for a brick?"

THE CLAY-WORKER

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THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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226 East Ohio St. T, A. RANDALL & CO. [Inc.], Indianapolis.

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My Country, Right or Wrong—My Country!

CURRENT COMMENT.

War is the main business of the world right now.

* * *

Common brick promise to be an uncommonly scarce article before the summer is over.

* * *

The incidents of life are the brick and mortar from which many great characters are built.

* * *

Travel costs so much these days that the injunction to spend the vacation at home sounds like sense.

* * *

There is plenty of room for the old heads and the old hands too, in the industrial work of the day to back up the youngsters who are with the colors.

* * *

While the extension of governmental regulation to many lines heretofore untouched may at first suggest a tightening up all around, it is really an indication that we are getting in better shape, getting the whole situation under better control, which will make for less waste of energy and more effectiveness all around. To state it in a few words, we are in much better shape industrially and financially now than we were early in the year.

* * *

Crookedness is bad medicine any time, and when it gets hooked up with war orders and supplies for our boys it is time to do something drastic about it.

* * *

The scarcity of metal makes a pretty good argument for overhauling, refitting and repairing the old machines so that they will give more and better service.

* * *

Getting the children into the war savings stamp habit not only means money for them in the future but it is splendid training in thrift and in the preparation for future usefulness.

* * *

As winter approaches it becomes plainly evident that there will not be plenty of coal for all, and that most of us will have to curtail in coal consumption for domestic use as well as for industry.

* * *

Entirely apart from pledges and governmental regulations there are so many other things to discourage building operations this year that no man is likely to build except under the urge of actual necessity.

* * *

We all feel sure there is a day coming when building operations the country over will be resumed on a large scale. Are you looking ahead and preparing for that day, so that you will be in shape to boost your product and meet the demand?

* * *

In the different states there is quite a lot of government and state money available for vocational training under the Smith-Hughes law. Are you keeping in touch with this work and getting a fair share of the training at work in clay products?

* * *

There is many a man working for wages this year that are so liberal that he should be able to build a brick home next year—or when the war is over. Are you telling him about the advantages of a brick home and preparing him for the building time to come?

* * *

There is still considerable duplication of effort in our industrial organization work for co-operation with the government, but at that we are getting into better working shape all around and are co-ordinating efforts in a manner that speaks well for the future.

MEANNESS AT ITS WORST.

There are varying grades and degrees of meanness, but of late, we have come, pretty generally, to recognize that meanness is at its worst when it is insidious, and sneaks upon us in an underhand way, at times even under the guise of friendship. We have had astonishing examples of it in the pro-German propaganda. The plain, outspoken pro-German has been easy to understand and attend to, while the kind that sneaks in, buys up newspapers which pretended Americanism while sowing the seed of discord, has furnished striking examples of human meanness at its worst. We have this same brand of meanness with us right along in our daily life. In one form and another it crops out in various undertakings. In industrial affairs it seeks to create discord, particularly in organization efforts. For instance, the N. B. M. A. has had to contend with that inexcusable brand of meanness which finds expression in destructive criticism and misleading comparisons. Fortunately, the members generally discount such expressions, but at that they are hurtful, in that they mislead those not directly interested. Fortunately for us all, the country is now awakened to a better understanding of things of this kind, so that in the future, MEANNESS AT ITS WORST will be more readily detected and so be less harmful than in the past, and those who properly exert themselves for the public good will be better understood and their efforts more appreciated.

SOCIAL AND ECONOMIC RECONSTRUCTION.

Students of the times are looking forward to a new day and a new order of things socially and economically as well as politically. And we will have to realize finally that we should guard against trade wars as well as real wars, and that warfare between the men who work and the men who pay is a bad thing for humanity. Autocracy and despotism will eventually have to pass out of social and economic arrangements just as it is passing for the nations. Then we will have to learn and understand that happy medium of democracy which comes between the extremes of despotism and that rank socialism which merges into anarchy. Democracy will have a place in business as well as in government, but in preparing for it we will have to guard diligently against the ideas and propaganda of extremists. Russia has furnished a warning example from which we may well take a lesson for the reconstruction days that applies to business management as well as to political government.

HOLLOW TILE GETS SOME PREFERENCE.

While the hollow tile manufacturers are called upon to make the same pledge as brick manufacturers about selling only for essential needs, there is a disposition on the part of the Priorities Division of the War Industries Board to show some preference in the treatment of hollow tile as to fuel needs, a disposition to consider the needs of the individual instead of the group or community, as has been ruled pertaining to brick. This is perhaps for the reason that the hollow tile industry is not so general in its distribution as brick. Anyway, the decision has been reached that hollow tile is in part a war industry—is needed in building and housing work—and for this reason is entitled to a place on the preferential list. There is no fault to find with this, and it should include brick in the same category, for surely the brick is needed, too, in the necessary building operations. Moreover, there is no room for doubt that in the final disposition of the matter brick will receive fair treatment, and the brick manufacturers will be encouraged to operate to the extent their product is actually needed in each community. There are indications, too, that this will mean more brick than we have been counting on.

THE LABOR OUTLOOK.

The labor outlook is considerably brighter notwithstanding that many additional men have been called to the colors, for we are getting the situation in hand better. That is the real meaning of the government in taking over the employment office business and the regulation of the shifting of labor—to help eliminate confusion and insure more effectiveness. In fact several agencies are actuating now to improve the industrial situation so far as help is concerned.

Among these is the general plan to distribute the war work over the country more generally so as to reduce congestion in some of the eastern centers. Meantime some of the first big jobs of construction work are being completed and releasing labor for others, the crop work is pretty well along so that in the coal mining sections more men are turning from the farms to the mines, and finally, let us not forget that the feminine half of the world has been coming forward nobly and taking up work formerly done by men.

Meantime we have been making adjustments all around, making labor saving devices help here and there, and getting settled down all around in better shape. So the labor outlook is not so bad, and we are in fair shape to accomplish wonderful things in an industrial way if we but look at it right, reduce friction and confusion and keep busy.

LET US BUILD HIGHWAYS.

While we are gradually bringing order out of chaos all around and getting the country's energies turned in the right direction to most effectively meet the needs of the day, there are some points where we are still muddling along at a discouragingly slow rate. One of these is in connection with highway improvement. The good roads idea seems to be swamped under plans for railway improvement, shipbuilding activities and things of that kind, and for the time being at least the powers that be seem to forget the fact that the highways of the country, and the motor trucks, offer the best and surest solution to traffic congestion. There does not appear to be any room for argument or question on the point of the advantages of good roads, making them one of the essential necessities of the day. The trouble seems to be in the concentrating of so much attention on other things that the highway building is being neglected. It is time to shake off this trouble, whatever it may be, and to get busy and keep busy at road building. Let us build highways, and keep building them. They are more essential today than even the inland waterways.

THE BUILDING TENDENCY.

Notwithstanding restrictions, and the fact that only essential building is being done, or is to be done till the war is won, there are matters of interest and comfort to the clayworking industry in the tendency of the times in building operations. For one and the main thing, the tendency is plainly toward better and more permanent building. Wherever the government is building a new powder plant, has built a shipyard or enlarged an arsenal, calling for housing for employes, the plans include the erecting of permanent buildings in which clay products are conspicuous.

It is noticeable, too, that in the general housing plans for crowded industrial centers attention is being turned more and more to permanence in building. This is quite a change from the early days of the war when the great rush called for lumber and many temporary buildings, and it is one of the good signs of the times.

It logically follows, too, that plans for private building, whether it be for a factory or warehouse now for war work, or for a future home, turn more to the idea of permanency. The cost item in building operations has reached the point where permanence carries more weight and is the one compensating idea turned to. So, taking it all together, there is much for encouragement and comfort to the clayworking fraternity in the building tendencies of the day.

THE MACHINERY PROBLEM.

Those who make machinery and those who need more machinery in their business, are today facing a more serious problem than ever before. It is not a question of cost, either, but one of metal. Our metal supply is being drawn on so heavily for urgent war needs that not a ton of metal is to be had except under special permission. This means delays and uncertainty in getting out new machines, and that in many

Table of Contents

A Terra Cotta Playhouse...123
The Pathos of Distance.....124
The Diversity of Products..125
Regulating the Shift of Labor. 125
Button-Hole. Talks..........126
Burning Clay Wares.........127
New Use for Brick Schooners 130
The Bonus System 132
Refractories 137
The Importance of Structure in Refractories 137
The 1917 Building Record...139
Brick Building Fifty Years Ago 139
National Federation of Building Industries 140
To Save Fuel in Industrial Furnaces 141
Expansion of War Industries Increases Fuel Demands..141
Change in International Organization ... .142
Machinery Prospects in France 143
Clay for Brickmaking.......145
Fuel Conservation in Clayworking Plants 184

CORRESPONDENCE:

Pacific Coast News..........126
Seen in New Jersey.........131
Brick and Building News from Evansville 135
Building News from Dixie Land 136
The Chicago Situation......143
Electrically Separating Clay from Water 144
Filling War Orders for Brick in England 144
A Need for Co-operation in Standardizing the Sizes of Face and Common Brick..144
Cincinnati Brick and Building News. 182

EDITORIAL:

Current Comment 170
Meanness at Its Worst.....170
Social and Economic Reconstruction 171
Hollow Tile Gets Some Preference 171
The Labor Outlook 171
Let Us Build Highways....171
The Building Tendency 171
The Machinery Problem....171
The Food Situation 172
Brick Dryers for Food Drying 172

MISCELLANY:

Ganister Makes Good Showing 127
Origin of Chinese Porcelain.131
Potters Get Wage Increase..141
Melting Points of Chemical Elements 172

INDEX TO ADVERTISEMENTS ON PAGE 186.

cases it will be impossible for the time being to supply some of the machinery wants calling for new work. It makes a situation in which we should all strive insofar as possible to make use of what machinery is already made. If you need additional machinery, look over what the machinery folks have in stock and try to adapt that to your needs even though it may not exactly fit in with your original plans. It is a time for the users and the makers of machinery to keep in close touch to the end that we may make the most out of what machinery is already made up and thus lessen the drain on our metal resources.

MELTING POINTS OF CHEMICAL ELEMENTS AND HEAT COLOR SCALE.

The Brown Instrument Company, of Philadelphia, Pa., has issued a most interesting chart printed in four colors, showing the melting points in chemical elements, together with a heat color scale giving a useful conversion table of Fahrenheit and Centigrade degrees. The color scale includes fifty elements from nitrogen to carbon, and should be found valuable in all kinds of heat treating work. This chart has been in great demand by the clayworking industry, and the Brown Com pany advises us they will be glad to mail one to any reader of The Clay-Worker requesting same.

THE FOOD SITUATION.

Aside from the pinch in sugar the food situation is very much improved. The new wheat crop gives promise of supplying our needs and those of our allies, if properly handled, and there is plenty of evidence that it will be properly handled. Garden crops have been abundant and family larders are being filled with cans. The one difficult thing is sugar, which is putting some restrictions on home preserving, jelly making, etc. There will be more sugar when the fall and winter crops come in, but meantime sugar must be pinched along and much of the putting up of food in homes modified accordingly. It will make for inconveniences, but we will get along without suffering or going hungry.

BRICK DRYERS FOR FOOD DRYING.

William C. Koch, of the Twin-City Brick Co., St. Paul, Minn., who has been in Washington for some time in the interest of the St. Paul War Industries Board, offers the suggestion, originating with his father, Fritz Koch, of using the brick drying facilities of the country for drying food products. This idea was first advanced by the senior Mr. Koch about a year ago, and since that time the Food Administration has given enough attention to the matter of special facilities for drying foodstuffs to suggest that here may be a line of work in which the brick men of the country, with idle drying equipment, can render material assistance to the Food Administration in helping solve the food problem of the country. The matter has already been taken up with the Food Administration at Washington by Mr. Koch, and meantime the thought suggests itself that every brick man with idle equipment of this kind might well get in touch with his local representative of the Food Administration, with a view to making use of the equipment for drying foodstuff.

RECOGNITION AND REPRESENTATION.

There has been in the minds of some, unnecessary worry about whether the clayworking industry will be recognized as it should be by the powers at Washington, and properly represented there and at other places where it is meet that the are not unmindful of the clayworking industry, or of any other industry should be represented. The people at Washington industry of magnitude in the country, and they need but little special urging to look out for its welfare. What they mainly need and want from time to time is information, and they are getting that right along, and will continue to get it as the need arises. Also the trade has been getting and will continue to get representation where that is called for. So while it is well to be awake to every situation that presents itself and keenly on the job, there is really nothing to worry over and get excited about in the matter of recognition and representation of the clayworking industry, nor any need to fear that it will be discriminated against in any general way.

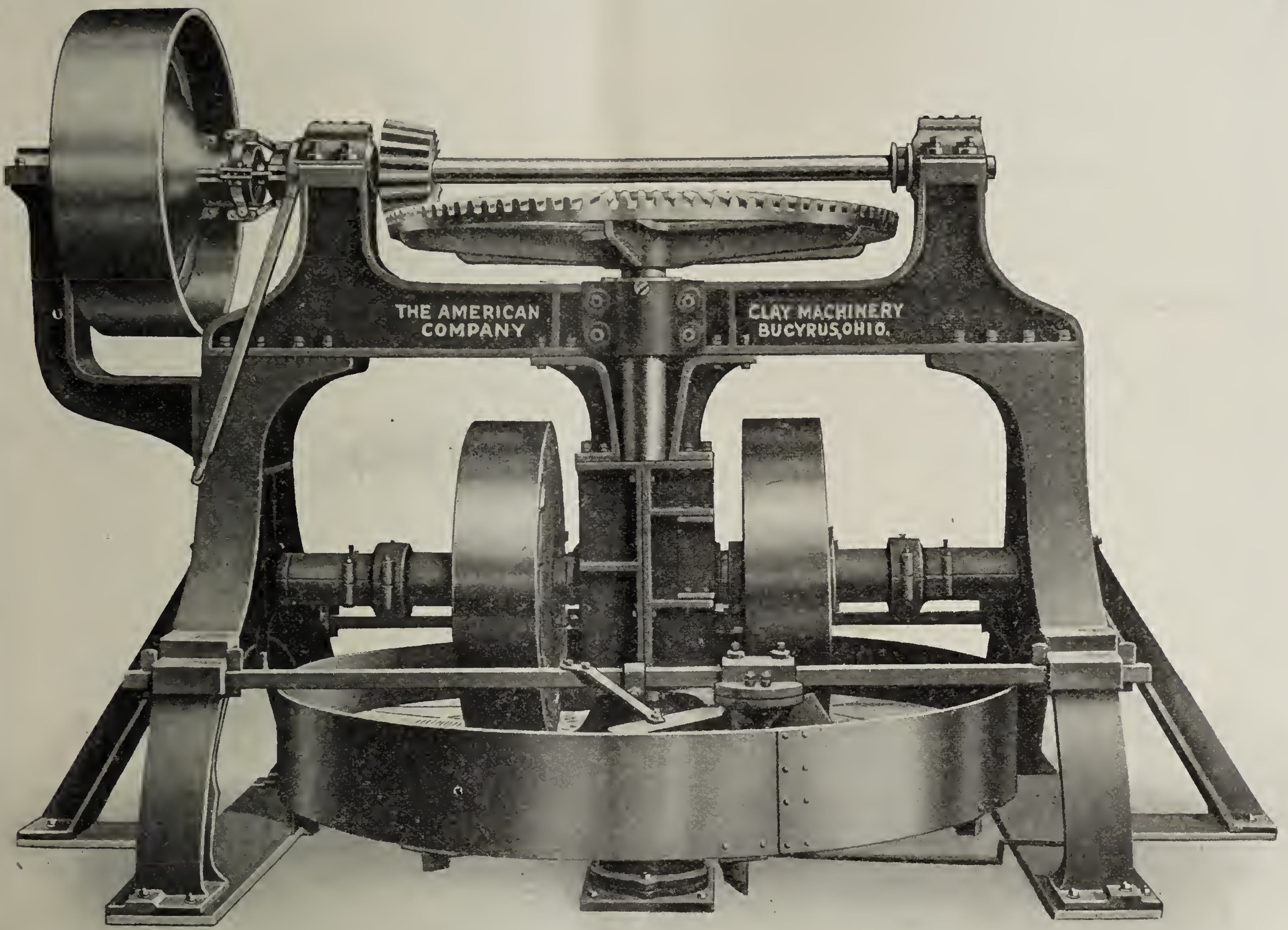
FRANK B. DUNN MAKES A RECORD IN SALE OF LIBERTY BONDS.

In the last Liberty Loan campaign, Frank B. Dunn ,of the Dunn Wire-Cut-Lug Brick Co., of Conneaut, Ohio, had charge of the same for his town, and such successful results were achieved that a recent meeting of the War Council of Conneaut, Mr. Dunn was requested to be manager of all future campaigns connected with the war work. Mr. Dunn advised the council that while he realized he would have a big job on his hands, he appreciated the honor of the appointment, and would give to the work his best effort, and this with Frank Dunn means some effort..

A PIONEER FACE BRICK FIRM.

F. B. Holmes & Co., Detroit, Mich., write that on June 1 they rounded out their twenty-eigth year in the face brick business. When they started there were no face brick being used in Detroit, or for that matter, in the state of Michigan, and they figure that in that time they have furnished the city of Detroit alone with 200,000,000 face brick. The company has had a very good trade this summer, having boked a number of wa rorders, including 1,500,000 face brick for the Ford Motor Car Co., as well as large orders for the McCord Manufacturing Co., Burroughs Adding Machine Co., Dodge Brothers, Lincoln Motor Co. In addition to this they have been filling a goodly number of orders for schools and churches, which, while not classed as war orders, are certainly essentials. The Holmes Co. is under the impression that its firm is the oldest dealer in face brick in America.

An American No 339 Ten Foot Dry Pan.



No cut of this American No 339 Ten Foot Pan could show the quality it displays in action. Its built for big output and to operate economically. It does both in a way that has pleased others and will please you. Send for complete description.

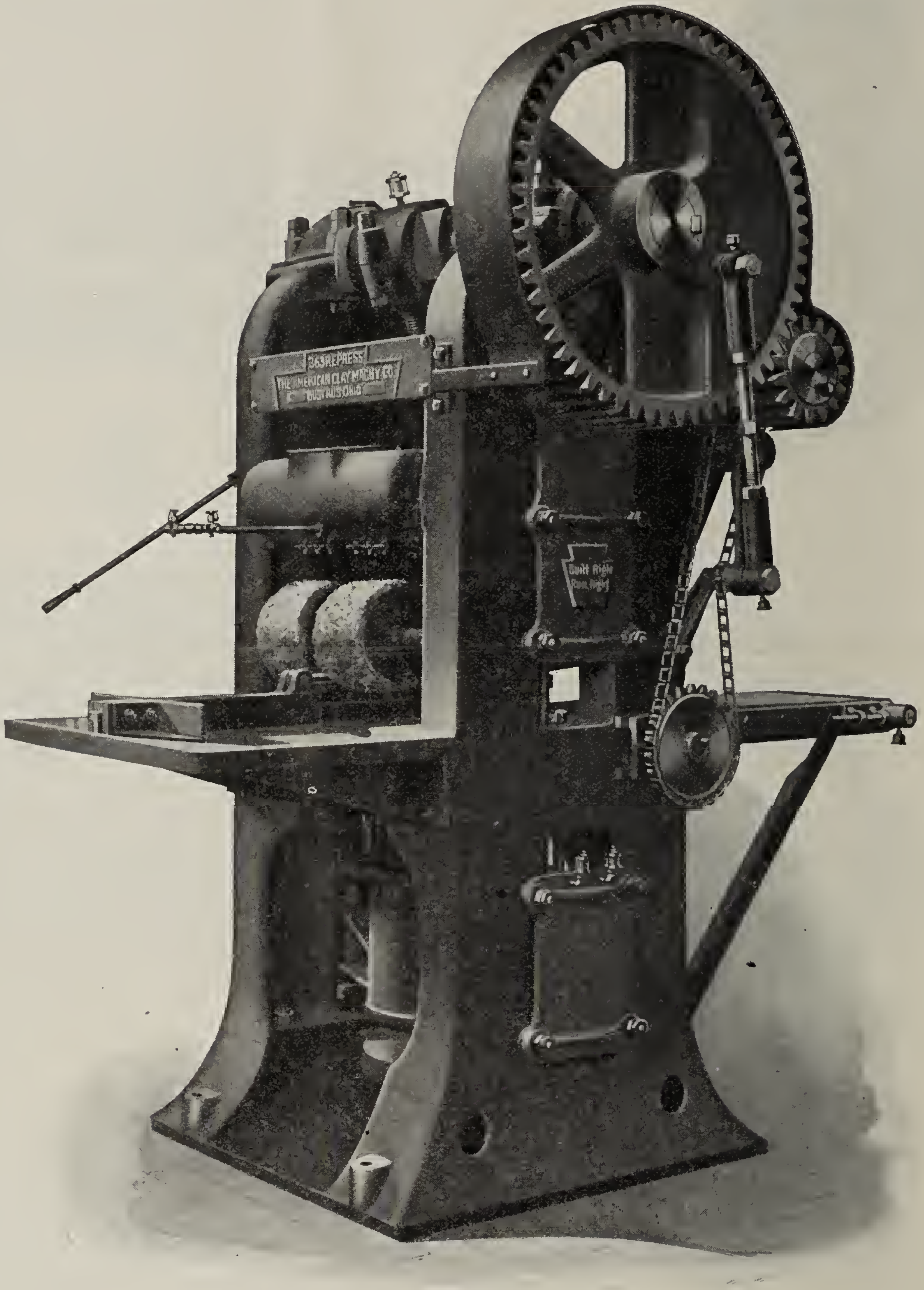
Get the "American" habit while the getting is good because what you get from the American IS good.

The American Clay Machinery Co.

Bucyrus, Ohio

No 365 American Repress.

When it comes to Represses the American line is backed by a record and a reputation based upon design, construction and operation that can not be approached.



Years of experience in building represses has naturally given us a world of schooling all of which are combined in the American No 365.

The larger manufacturers, where output as well as quality counts, have given this press a test which justifies our strongest statements and promises as to what it will do for you.

We have a complete description of the American No 365 Press which will interest every person who has use for this or any other type of press. It is yours for the asking.

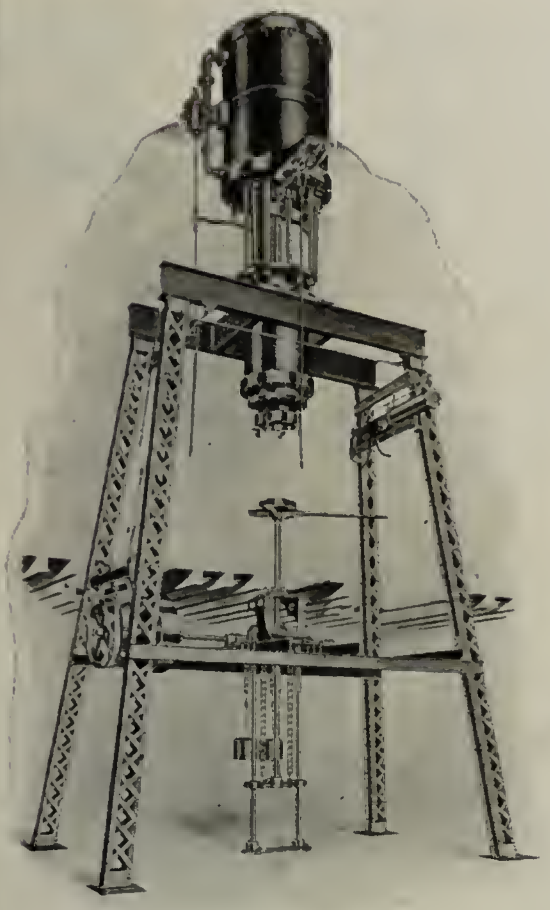
Its a mighty good time to "get" the American Habit.

We build every machine and appliance required in any Clay Plants and every machine we build is replete with American Ideas and American Quality.

GET THF AMERICAN HABIT--IT WINS IN EVERY CONTEST.

The American Clay Machinery Co.

Bucyrus, Ohio



THE AMERICAN PRESS And THE AMERICAN FEEDER.

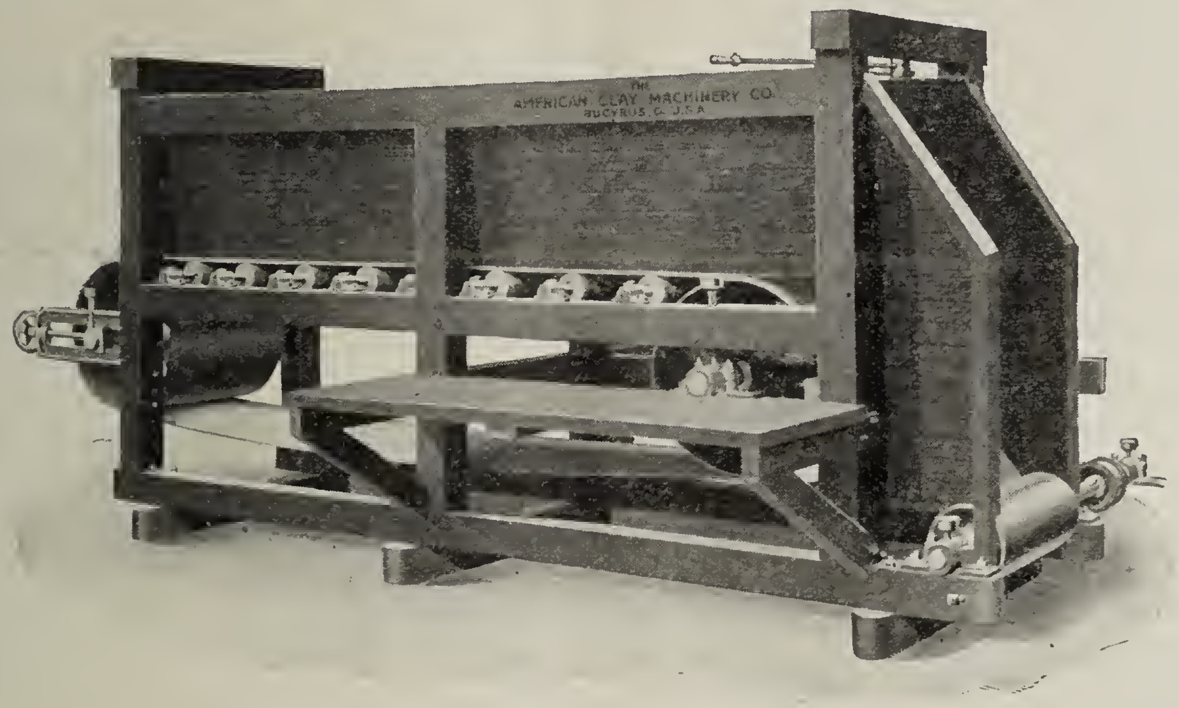
Here is a splendid combination of Sewer Pipe Press and Press Feeder both of American make.

The American Sewer Pipe Press is most excellently conceived and constructed.

It is built on steam engine practice and has proven satisfactory wherever used.

The excellence of its design and the faultlessness of its material and building are an insurance of its successful operation both from an economical and an output standpoint.

Ask for our complete, detailed description of American Sewer Pipe Presses and other machines and appliances used in plants of this kind.

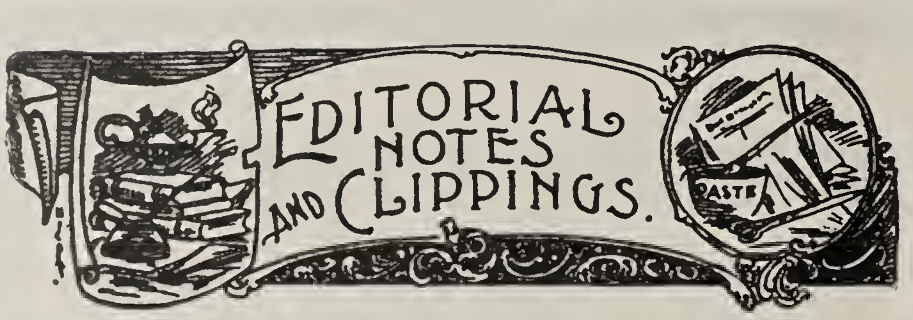


The American Sewer Pipe Press Feeder will recommend itself to those who desire a well built, simple and efficient machine of this kind. A full description will be sent upon application.

The American Clay Machinery Co.

Bucyrus, Ohio

"TRY A THRIFT STAMP FOR THE HUN HABIT".



EDITORIAL NOTES AND CLIPPINGS.

John F. Griel, for many years a prominent brick manufacturer of Lancaster, Pa., died quite suddenly, August 5. He was eighty-six years old.

The board of trustees of the Face Brick Dealers' Association held a two-day session at Cedar Point in July. The headquarters of the association are in Cincinnati.

Ira Sherman, while working on the dry pan at the Ridgeway Brick Company plant at Ridgeway, Pa., fell in and was crushed to death before the machinery could be stopped.

The United Brick and Tile Corporation, of Elgin, Texas, was recently incorporated with $175,000 capital stock. The incorporators are S. F. Kirksey, Jr.; S. F. Kirksey, and H. R. Burt.

A. V. Sturgeon, president of the Nansemond Brick Corporation, Norfolk, Va., writes that they have secured orders for large government contracts, and their plant is running to full capacity.

The Jewettsville Clay Products Company, of Jewettsville, N. Y., has been incorporated with $75,000 capital stock. W. Joseph Degenhart, Fred M. Haenszel and Nicholas E. Kenealy are the incorporators.

Tavini & Mattiussi, of Chester, Pa., have purchased twenty acres of land near Linwood, Pa., on which they will erect a large brickmaking plant. A large part of the output of the plant will be used for houses for Government workmen in that section.

One of the biggest plants in that section is the fire brick factory of the Harbison-Walker Refractories Company at Downington, Pa. Needless to say this plant is running to full capacity, for it is supplying steel furnaces with fire brick shapes. M. D. Corr is superintendent of this plant.

The Hebron (N. Dak.) Fire & Pressed Brick Co. has been doing a considerable amount of work lately, so much that they are making arrangements to put on another shift of workers for a short time. Their work and demand for material this year has been to a great extent in the manufacture of tile.

A big deal has been negotiated by which F. A. Sebring, of Sebring, Ohio, becomes sole owner of the Salem China Company's six-kiln pottery at Salem, Ohio. According to announcement, the new owner will immediately enlarge the plant. Negotiations are pending for the purchase of land adjoining the pottery.

The Provo Pressed Brick Company, of Provo, Utah, recently booked an order for drain tile that is a record-breaker for that firm. The contract calls for 88,000 feet of drain tile, varying in size from 6 to 16 inches, for what is known as the Benjamin and Lake Shore districts, and will tax the capacity of the plant for the balance of the season.

Harvey C. Dewalt has purchased the old Bigler brickyard at Harrisburg, Pa. The purchase price is given as $20,000.

The Brooks Brick Company, of Brewer, Maine, has taken a contract to furnish 1,900,000 brick to be used in the construction of houses at Bath for the accommodation of shipyard workers. Shipments will be made at the rate of three carloads daily for two months.

E. B. McNear, brick manufacturer of San Francisco, Cal., was arrested not long since for alleged violation of the fish laws of the state. His case was tried before a jury of women and the verdict "not guilty" was rendered. This is said to be the first time such a case had been tried by a jury composed completely of women.

The Fulton Fire Clay Products Company, of Bigler, Pa., has been incorporated with $30,000 capital stock, by A. R. Hunter, of Irvona, and others.

The Greenpoint Fire Brick Company, New York City, recently purchased a site, 75x180 feet, on which they will erect an additional factory building.

After many delays, the Knox Clay Products Company's plant at Knoxville, Iowa, was started early in July, and is now turning out a good grade of hollow building block and tile.

The Brazil Clay Company and the Chicago Sewer Pipe Company, of Brazil, Ind., have not been operating for more than a year and will not resume operations until after the war.

The Burke Brick and Tile Company, of Fort Smith, Ark., report a fairly good business this season. They recently closed a contract for 500,000 brick for the Galloway College, at Searcy, Ark., and another for 400,000 for an addition to Hendrix College.

Pride and Fairley, civil engineers of Blytheville, Ark., advise us that that town contemplates doing some street paving and is investigating the merits of brick pavements as compared to others. Pride & Fairley will be glad to correspond with paving brick manufacturers in that territory.

The salesmen of the A. P. Green Fire Brick Company, of Mexico, Mo., held their annual meeting at the office of the company July 22 and 23. H. A. Vandaveer, who is at present in Cuba, was the only salesman not present. The men all reported a good demand for the company's product.

Thirty thousand dollars damage are demanded from the Ohio Clay Products Company, of Salineville, Ohio, in a suit filed in common pleas court for the death of fourteen-year-old Merle Morrow, son of Fred Morrow, of East Liverpool, which resulted from injuries received in the plant of the company on April 24, 1917.

The American Sewer Pipe Company and the Hydraulic Press Brick Company, Brazil, Ind., have for some time been engaged in the manufacture of silo blocks, and the National Freproofing Company, one of the largest concerns of its kind in the country, is at work on silo blocks, as is also the Ayre-McCarel-Regan Clay Company.

The plant of the Clay Castings Company, of New Cumberland, W. Va., will be placed in operation within a short time, under new management. C. L. Gray, of East Liverpool, who has been connected with the concern, will continue in the business. Plant will be put into operation and remodeled and equipped for the manufacture of hotel ware. A tunnel kiln will be built.

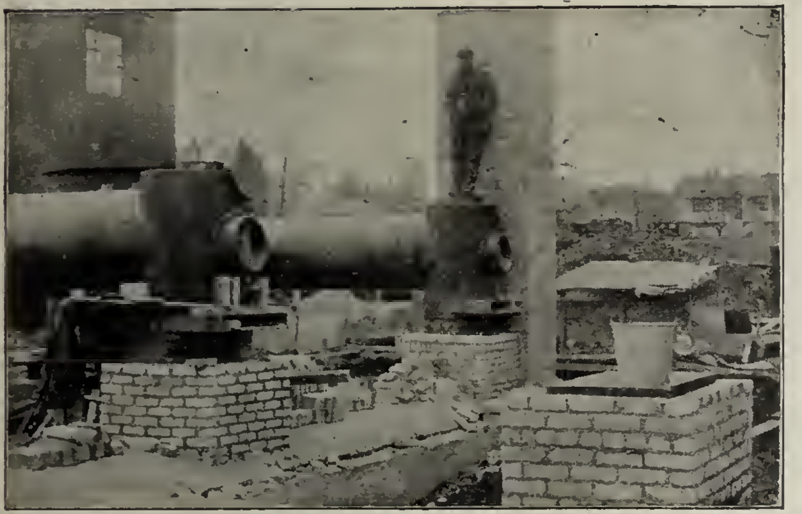
The Clay Products Company, the largest of the Brazil (Ind.) plants, has been hard hit by the war and the curtailment of building throughout the country. The company moved its general offices from Indianapolis to Brazil early this year and now the sales office has been removed to Chicago. M. M. Potter, former assistant sales manager, has been placed in charge of the Chicago office. Harry Walters, general sales manager, will maintain his headquarters in Brazil. This company, however, has been able to continue operation, due to the fact that a number of war orders were received some time ago. The company also has a large silo block order.

The new plant of the Salverson Face Brick Company, of Petersburg, Ill., started operations August 1, with a daily capacity of 30,000 brick. Thomas Salverson, the president of the company, is an old-time brick man, having first made brick by hand some thirty years ago, and has continued in the business ever since. The plant is equipped with modern machinery and appliances, and the brick will be burned by the

25% SAVING

and usually more

In Coal and in Labor



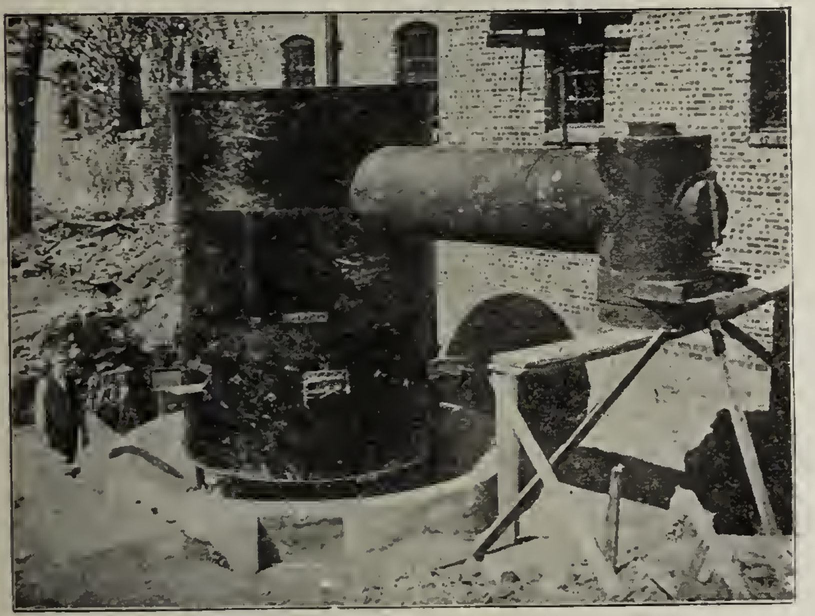
Construction of two
International Producers

Will be made by
the application of

PRODUCER GAS

to your Kilns

Whether you burn
Brick, Tile or Pottery



Construction 1-7 ft.
Producer for Pottery Kiln

INTERNATIONAL PRODUCERS

and forced Draft

BURNERS

can be adapted to your Kilns

Remember your coal troubles last winter

Write us today

International Clay Machinery Co.

DAYTON, OHIO

Underwood gas producer system. Edgar Watkins is secretary of the company.

The Indiana Paving Brick Company, Brazil, Ind., is busy manufacturing paving brick for market roads and for Government orders.

J. B. Hammond, B. E. Welch and P. R. Morrison have incorporated the Rome Refractories Company of Rome, Ga., with $100,000 capital stock.

Frank McCannell, son of J. S. McCannell, and associated with him in the Milton Pressed Brick Co., Milton, Ont., Can., has recently joined the British colors and is now in camp for training.

An unconfirmed report states that the Clay Products Company, Brazil, Ind., may engage in the coal mining business in the near future. The company has been exploring the Indiana coal field for some time, and it is reported that a profitable vein has been located. The company has complete machinery for coal stripping.

One of the largest contracts for brick that has been booked for some time was secured recently by the Georgia-Carolina Brick Company, of Augusta, Ga., calling for 2,500,000 brick for the Government picric acid plant at Brunswick, Ga. The brick are to be delivered at the rate of 100,000 per day. Howard H. Stafford, president of the company, is given the credit for landing the contract.

The several clayworking plants at Brazil, Ind., are feeling the pinch of war more and more each day. In an effort to keep the plants running during the war, a policy of retrenchment has been adopted by each of the large plants. The output of the various plants having been heavily curtailed, fewer laborers and workmen are employed. Office departments are being consolidated and fewer clerks and stenographers are doing the work.

The Auburn Shale Brick Company, of Gettysburg, Pa., which has been closed down since last November, started operations the latter part of July, turning out 30,000 brick per day. It was not the intention of the management to be closed so long, the shutdown being for the purpose of installing new machinery. It was expected that this would be completed in a reasonable time, but the machinery was held up in delivery for a long period, which together with the shortage of labor in getting the machinery placed after its arrival caused the long tie-up.

F. Vernon Aler, of Martinsburg, W. Va., president of the Martinsburg Municipal Shale Brick and Block Company, has instituted suit against David E. Tracey, of Harrisburg, Pa., president of the Harrisburg Pipe and Pipe Bending Company for $50,000 damages. President Aler alleges that Mr. Tracey, who, next to Mr. Aler, is the heaviest stockholder of the brick company, and who has been the financial backer of the concern, so manipulated the company's affairs as to secure the appointment of a receiver in the Federal Court of that district recently, ousting President Aler and other officials from control of the company, and thereby causing him to suffer severe financial loss. The suit will be tried at the September term of court.

To promote their mutual interests as well as to assure a broadened acquaintance, salesmen and sales managers of building materials in Chicago and vicinity have formed the Chicago Building Material Salesmen Club, with a charter membership of thirty. The membership of the new club is expected to be enlarged immediately to between 200 and 300. E. W. Behrendt, of the Chicago Firebrick Company, was elected president of the new organization. Other officers include: Vice-president, James P. Coyle, of the Consumers Company; secretary, C. E. McNeal, of the Garden City Sand Company; treasurer, William M. Dee, of the W. E. Dee Company. Directors, in addition to the officers: R. E. Thomas, of the American Sand and Gravel Company; Arthur F. Hales, of Farr Brothers; James J. Cronin, of the Consolidated Company; Charles F. Dynes, of the Wisconsin Lime Company, and J. Hill. The club will meet the second and fourth Mondays of each month.

The Simpson Brick Company's plant at Brazil, Ind., is turning out fire brick, for which there is a big demand in the steel manufacturing centers of the country.

The Liberty Refractories Company has been incorporated at Wilmington, Del., to manufacture brick, tile, etc. The capitalization of the new concern is given as $240,000.

William Burgess, superintendent of the Don Valley Brick Works, Toronto, Ont., was married the latter part of June to Miss Frances J. Whittem. On his return from quite an extended wedding journey, he was presented with a handsome chair by the employes of the brick plant, and with a cut glass water set by the executive committee of the Canadian National Clay Products Association, of which Mr. Burgess is vice-president.

A BAD BRICKYARD FIRE.

We are in receipt of a letter from A. D. Keyser, of Webster & Keyser, hPiladelphia, Pa., saying that his plant at Thirtieth and Tasker streets was badly damaged by fire early in July, causing a loss of $30,000. The steam dryer of 40,000 capacity, together with racks of 80,000 capacity, and all the wooden pallets, wheelbarrows and sheds covering a space of 235x300 feet were totally destroyed. The fire is supposed to have been of incendiary origin.

BRICK ROAD MARKERS.

The Lincoln Highway Forum, in discussing the subject of permanent markers for the Lincoln Highway through the eastern states, pays this deserved compliment to clay products: "The greatest advance in the way of permanent marking upon the eastern section of the Lincoln Highway is in Crawford county, Ohio, where permanent and artistic brick markers are erected, with the Lincoln Highway emblem set in the brick in a terra cotta mounting."

AT THE HOME OF THE H. BREWER CO.

A RECENT VISIT to Tecumseh, Mich., found Chas. Burridge, manager of the H. Brewer Co., on the job as usual, though he admitted that business was not "as usual." Nevertheless "Charlie" was usually busy superintending some important additions to their factory, made necessary by some war work which they are now doing to help Uncle Sam win the war.

A trip through the factory was a treat for it is a model small capacity plant. The mechanical equipment is up to date and so well arranged that it may well be termed a hundred per cent. organization.

The production of The Brewer Brick, Tile and Clayworking machinery was the original idea, and to that has been added the production of a high grade, low cost concrete and mortar mixer, which, like all "Brewer" machinery, has proven very efficient and consequently very popular with contractors. Its design and construction being such as to afford a maximum capacity with a minimum cost for labor and power.

They also make the "Republic" Hoisting Outfit, which is especially adapted to farm work, filling silos, etc., and is also an excellent outfit for masons and building contractors.

Other devices, such as Automatic Water Tanks for concrete mixers, and a light running Rotary Pump that is "fool proof" and can be used for drawing water from shallow wells, ditches, barrels, etc., is proving efficient and adding to the fame of H. Brewer & Co., justifying their well-known slogan, "If Marked Brewer, Its Good."

Illustrated leaflets, giving full particulars as to these various devices can be had for the asking. See ad on page 203.

DEPENDABILITY IN PERFORMANCE IS THE STRIKING CHARACTERISTIC OF

THE UNDERWOOD PRODUCER GAS BURNING SYSTEM

(Patented)

YOU CAN DEPEND UPON IT TO

Save Much in Fuel
Save Much in Labor
Give Ideal Burning Conditions
Reach Any Necessary Temperature
(2600° to 2800° is easy)
Possess a Host of Other **Real** Advantages

The above are reasons why every thinking, progressive Clayworker should investigate the system.

Moreover, every producer of Clay Products who takes into serious consideration the drastic fuel restrictions of the Government, must see in this system the one true method of burning clay products economically, and in accordance with the Government's mandates to conserve fuel.

Again, do not lose sight of conditions which will prevail after the war. Our experience now teaches us how vital it is to conserve fuel and labor, and the only way in which we can profit by this lesson is to prepare by installing dependable, economical appliances, and for the burning of clay products the Underwood system is the one best bet.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-
Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

BY THE LIGHT OF THE KILN FIRE

A BRICK YARD MEMORY.

JOHN LYNCH, of Machias, a leading Maine lawyer, was telling a story one day about an old friend of his, an Irishman named Pat Connelly, which cannot be written as it was told, and perhaps may not give the same inspiration. Anyhow, here it goes: A very wealthy resident who had the reputation of being quite a tight-wad, had died and left a will leaving most of his estate to a few worthless creatures who were as smug and snobby as himself. No mention was made in the obituary notice as to the cause of his death, which occurred at the age of 61.

"Lynch," said Connelly, "Do you know what killed Hacket?"

"No," said Lynch, "Never heard."

"Well, then, I'll tell you," said Connelly. "When Hacket was a young man he was liked by everybody. All the boys and girls liked him and he was a good worker, too. Many's the hard day's work I did with him in Ivry Harlow's brick yard, and a good, good fellow he was, but one day he left the yard, put a good suit of clothes on him and went to work in a store, and in a little while he owned the store and then again he owned a mill and then a lumber operation and a granite shed and a fishing boat and then he got lots of money, and he got smug and mean; and he got richer and meaner and smugger, and so mean that his heart grew smaller and then he'd get more money and he'd get meaner and his heart grew smaller and smaller, and he got more money and ships, and he got meaner and his heart grew smaller and meaner and smaller and meaner and it grew so small that it wouldn't work and then he had to die, poor fellow. May the Lord have mercy on his soul if he had any left. Poor fellow; it's a queer world, ain't it, Lynch?"

AS PROMISED.

"That builder said he would build us a cracking good six-room stucco house for eighteen hundred dollars."

"Well, did he?"

"Yes, it's cracking good already."

IN THE SWING A YOUNG MAN'S FANCY.

"Jones says that porch swing of his has paid for itself already."

"A porch swing is a great comfort."

"It isn't that—but he has married off two daughters this summer."

INFANT INDICATIONS.

Fond Ma—Our baby boy keeps saying "Extra! Extra!" in his sleep. I hate to think of him growing up and being nothing but a newsboy.

Fond Pa—Never mind, dear. He isn't going to be a newsboy. He's going to be a building contractor.

BEFORE WAR TIMES.

Minister—Young man, do you know the price of the pursuit of pleasure?

Blacksheep, Jr.—Yes, sir! Thirty cents the first mile and ten cents for every mile after that.—Lampoon.

THE FOUR-MINUTE MEN.

In this country we depend mainly upon the printed word for the conveyance of news and information generally. It is a country of more newspapers, trade papers and periodicals generally than is found in all the rest of the world combined. So while we like oratory upon occasion, and applaud orators when they acquit themselves creditably, we depend mainly upon the printed word for information ourselves, and look upon Russia as a shining example of where and how they spread information and propaganda by speechmaking to crowds of the masses wherever they may be gathered. Still, with all our reading, no one can listen to the efforts of our four-minute speakers at theaters and picture shows and feel the effects of the spirit they awaken and the sentiment they arouse, without feeling that they are rendering a great service to the country through these efforts. Tell them so, that you may encourage them to continue in the good work, and feel that they are accomplishing something worth while.

ORDNANCE DEPARTMENT ANNOUNCES NEW DISTRICT.

The War Department authorizes the following from the Ordnance Department:

Announcement is made by the Ordnance Department of the establishment of a new district to be known as the St. Louis Ordnance District with headquarters in that city. Mr. M. E. Singleton has been named as ordnance chief.

The territory covered by the new district will include the states of Missouri, Arkansas, Oklahoma, Texas, Kansas, Nebraska, Montana, Wyoming, Colorado, New Mexico, Arizona, Utah Idaho, Washington, Oregon, Nevada and California.

The district also includes all that portion of the state of Illinois lying south of the northerly boundaries of the following counties: Adams Schuyler, Cass, Macoupin, Christian, Shelby, Cumberland and Crawford.

The territory embraced by the new St. Louis district has previously been administered by the Chicago District Office, the territory of which is now modified to include the states of Minnesota, Wisconsin, Iowa, North Dakota, South Dakota, that portion of the state of Illinois lying north of the northerly boundaries of the counties mentioned above, and that portion of the state of Indiana lying north of the northerly boundary of Warren, Grant, Clinton, Jay, Tippecanoe, Blackford and Howard counties.

The location and date of opening of the St. Louis office will be announced later.

Mr. Singleton, the ordnance district chief, was from 1902 to 1911 vice-president of the East St. Louis Cotton Oil Co., and from the latter date until last March was president and general manager of that concern. He is a director in the Mechanics American National Bank of St. Louis and in several other banks in the state of Missouri.

Mr. George J. Roberts of East Orange, New Jersey, vice-president and general manager of the Public Service Corporation of New Jersey, was recently appointed as ordnance district chief of the New York District, and will have his office in the Albemarle building, Broadway at 24th St.

The assignment of the St. Louis office to the western territory completes the list of eleven districts into which this country has been divided, the complete list of cities in which offices are located now being: Boston, Mass.; Bridgeport, Conn.; New York, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Detroit, Mich.; Philadelphia, Pa.; Pittsburgh, Pa.; Rochester, N. Y. and St. Louis, Mo.

There is also an Ordnance District Office established in Toronto for handling business in Canada.

One of the greatest handicaps to improvement is that many of us nurse the idea that we are already improved.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

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IMPORTANCE OF HIGHWAYS

BRICK PAVED Roads Essential. Pertinent Facts That Patriotic Tax Payers May Well Keep in Mind When Highway Improvements are Proposed. * * * *

THERE SEEMS to be a wide difference of opinion among those who should speak with the voice of authority as to what is now ESSENTIAL and what is NON-ESSENTIAL in the industrial world. Surely railways are essential, and by the same token highways, the arteries of commerce, over which food products, munitions and other indispensables must be transported should be so classed. One goes with the other in the necessary intercourse between the producer and the consumer. This was ever true, and is more so now than ever before. The advent of the rapid, heavy service motor truck would with permanent highways relieve the railways of a large per cent of the traffic which now blocks transportation, and has resulted in embargoes that would not have occurred if our principal highways were permanently surfaced with vitrified brick. The transportation of troops and the supplies required for them would have been facilitated immensely had our main highways been of the dependable sort, such for instance, as the brick paved roads between Cleveland and Akron over which immense tonnage is hauled every week in the year. Such highways are surely **essential** and it is rather singular that the material for constructing same, vitrified paving brick, is not also classed as essential, and every possible facility afforded the manufacturer for the production and marketing of his brick.

A Brick Paved Highway which Enables Heavy Service Trucks to Compete with Railroads the Year Round.

It is to be hoped that reason will prevail and that a more liberal policy will be adopted affecting the construction and maintenance of our highways. "The unimproved highway is our weakest link today from the standpoint of military transport," says Lieut. Col. P. S. Bond of the U. S. Army Engineer Corps, and he adds, "Whether the auto or auto truck can be used, or whether we must go back to the age of the mule whacker and the dreary march rests with those who are responsible for highway improvements. Many cities within a hundred miles of our coast or frontier may some day be the base of military operations that will put its surrounding highways to the severe test. Very few would meet it creditably. Cuyahoga County, surrounding

Cleveland, would offer a better opportunity for modern maneuvers than any similar locality with which I am familiar. In a military crisis such a system of roads would much more than pay for itself in the saving of other forms of military expenditure. Considering also how they conduce to the wealth of the nation in times of peace, there seems to be no possible argument against this phase of preparedness. The usefulness in war of a substantial system of highways can scarcely be overstated."

Our illustrations, for which we are indebted to "Dependable Highways," fully bear out the foregoing statement. Compare the view of the boys in khaki marching briskly over the brick paved causeway at Galveston, Texas, on our front cover, with the glimpse of the Russian soldiers tramping through the slush of an unimproved roadway in that barren country and the reader may readily imagine the advantage of good roads in war time.

"The economic value of our improved highways has been overlooked constantly by the Federal Government in its plans for winning the war," says S. M. Williams, President of the Highway Industries Association. "We are constantly pleading with the farmer for a greater production and efficiency on the farm, and the farmer is responding with improved methods and equipment—but what are we doing to aid the farmer in marketing his product? Last year we lost, and again this year we will lose, millions and millions of dollars worth of food products and farm labor because of inability to market the products when they should be marketed. We are crying food conservation and the public is responding nobly, but our waste through our indifference to the country's need of improved roads is many times greater than our saving. With the failure of the railroads to meet traffic demands, industry (I mean all industry from the farm to the factory) was compelled to turn to the highways for relief. Highway transportation will follow highway development, but it cannot lead. Encouraging highway transportation beyond highway development is dangerous. If we place roads in a secondary position, instead of a primary one, we shall thereby greatly handicap a permanent and practical use of the highway for motor vehicle transportation."

Under the head "Road Improvements Will Not Down," the editor of "Dependable Highways" states that all familiar with the subject concede the importance of highway improvements, but that notwithstanding this sentiment a repressive influence has been and is now at work which hinders and obstructs this vital factor of military power, and adds, "Those who repress and obstruct do so by saying that the improvement of highways shall be limited to those of military and economic necessity, but no one who uses these terms as a shield behind which to exercise their repressive power, has either been able or willing thus far to clearly define their meaning." The writer continues:

Russian Soldiers Tramping Under Difficulties. Compare this with the View on Front Cover Page.

"We are unwilling to judge these men as acting from an unpatriotic motive or from ulterior motive of any kind. Accepting the attitude as actuated in the interest of the government, it is fair, however, that they shall come forward with the best explanation they can give to satisfy the public that they are right and until they do so their activities must be regarded as mysterious by those who think otherwise.

"Any suggestion that road improvement must not be undertaken because of financial inability is illogical and unreasonable and tends to impeach the financial strength of the country. We are financially able to do everything for the successful prosecution of this war. To say otherwise would be like that of a commander in the midst of a battle acknowledging and announcing to the enemy that he was unable to protect his right or left wing because he had not the men to do it.

"Nor is it a good answer to permit the impression to go abroad that in some irregular way the function of circulating medium is robbed of its power or is destroyed because it passes through the channel required in road building. The American dollar moves as quickly and is no more injured in such activity than that of any other commercial transaction. It is returned promptly in its full strength to perform another financial duty. In its turn it is loaned to the Government or donated to the Red Cross. In either case, it finds its way back to the pocket of some loyal American, ready to send it on its errand of financial support and strength for the maintenance of public welfare at home and sustaining the army abroad.

"Will any one dare say that the public in these war times must do without roads? Such a suggestion cannot be heard with patience at all. It can only come from impractical, ignorant and inexperienced minds. It is equally as destructive to limit road improvement to the most essential as to limit food production to the most productive localities.

"It is admitted on every hand that the railroads cannot care for the required transportation that the country must have to sustain itself.

"In the meantime actual first essentials, guns and food, are hindered and delayed, and this hindrance and delay affects the rapid mobilization of our army. The repressive theorist does not understand the inherent physical strength that is being wasted in the months of August, September and October and a part of November which cannot be, and is not in the nature of things employed in the production of other war essentials, namely that of farm labor, fifty per cent of which is unemployed during these months, which together with at least thirty-three per cent of the twenty-five million of horses and mules now out on pasture, constitute a waste which is well nigh criminal in these days of so much need, and yet this is but one of the wastes which has resulted from the restricted policies in road building.

"In normal times this is the source from which is drawn the labor used in a vast amount of road improvement. There is no reason on earth why its employment now should not be encouraged to the utmost. What we need now is more of production, and less of obstruction."

In discussing the question of highway improvements, a writer in a recent issue of "Engineering and Contracting," says:

"We are told the Government will permit the building of all really 'necessary roads.' In the name of common sense, what improved roads are not necessary—economically necessary—right now? Few indeed, if any. Farm hands never were scarcer, food never was dearer, and a continuous supply of it was never so imperative, both to prevent railway congestion and to win the war. Of all the important factors in winning the war, food is by common consent placed first.

"The lower the cost of production of food—including all costs between farmer and consumer—the greater the quantity that will be produced by a given number of men in a given time. Better roads greatly reduce food costs. They even prevent partial food famines as Hoover has indicated. Let there be an end, therefore, to myopic statesmanship that can see the food only at the market end, and is too shortsighted to see the same kind of food rotting on the farms for lack of good roads."

A Fine Brick Paved Country Road over which Heavy Loads May be Hauled with Little Power.

CHEERFUL FUEL NEWS.

It is refreshing to note that here and there is to be found a cheerful spot in the fuel news of the day. West of the Mississippi there has been enough accumulation of coal screenings that the brick men have been allowed to take on more fuel than they had hoped for. Also at this writing Illinois shows a surplus in screenings which sounds like easier times in industrial fuel. Usually the summer surplus of coal is in domestic lump, but this year the early stocking of domestic coal has so augmented the supply of screenings that in some fields screenings have shown a surplus even while the domestic supply was short. It is just possible that the winter may not be so hard as we expect in industrial coal.

FROM CAMP TO CAMP BY MOTER CAR.

Transcontinental Lincoln Highway Trip Offers Vast Fund of Military Interest.

AWAKE, AMERICA! for the day is begun by the quickening impulse of the bugle call and the martial roll of drums. And mark a full day's work well done when taps sound the hour of rest.

North, South, East and West, this program holds where eager youth in the country's service is receiving the needed training to play its vitally important part in the battle of humanity. Activities seeth in the posts and camps of the national army, in many states from coast to coast. Each camp and mobilization point holds the heart interest of every man, woman and child.

Where is the individual who has not, or does not want to see these soldiers of the Stars and Stripes in training? A visit to any one camp is in itself a powerful incentive to further investigation of this great concentration of man power of the nation, and since the railroads are hard put to it to furnish the necessary transportation of men, material and supplies, it may be regarded as a patriotic move to make your visit to the various camps by automobile.

Think of the opportunity of a transcontinental drive upon the Lincoln Highway; anticipate the start from the corner of 42nd street and Broadway in New York City, and before starting upon the Lincoln Highway proper, make use of your motor car for a trip to Camp Mills, Long Island, and Camp Upton at Yaphank. Gathered at the former will be found the divisions and units of the new army, eagerly anticipating the call aboard ship and away to the scene of action.

At Camp Upton, a regularly established national army camp, you will be amazed and proud to note the progress being made in the development of soldiers of the United States from the varied citizenry of that great melting pot—New York City.

If Broadway and Fifth avenue have held your interest in past years, you will find it tripled now. The smart uniforms of our own and of our allied officers are to be noted in abundance upon the streets and in the hotels, theatres and restaurants, and mingling with the brown clad figures from the nearby camps is a plentiful sprinkling of navy blue and white. New York today, in her military atmosphere, is a picture not soon to be forgotten.

Starting westward through New Jersey upon the Lincoln Highway trip, Camp Dix at Wrightstown, N. J., may be visited by a short detour from Trenton; and the Naval Academy at Annapolis may be reached in no great time by motor car from Philadelphia. Starting from Philadelphia, a beautiful drive of 116 miles upon the Lincoln Highway will take the motorist to the historic grounds of Gettysburg, where Camp Colt and the camp of the newly formed Tank Division are located. A splendid comparison of the past and present of the nation's fighting forces is to be obtained by a visit here.

Regular army posts and training schools may be reached by relatively short drives from the Lincoln Highway at Columbus, Ohio, and at Fort Benjamin Harrison, near Indianapolis, Indiana. Camp Custer at Battle Creek, Michigan, lies but a half day's journey from the transcontinental route at South Bend, Indiana.

Nothing will be found more interesting than a detour from the Lincoln Highway at Dyer, Indiana, into Chicago over the well marked Lincoln Highway Feeder, for a visit to the Great Lakes Naval Training Station where the man power of our rapidly growing high seas fleet is receiving skilled instructions for ocean service. Camp Grant at Rockford. Ill., may be visited before returning to the Lincoln Highway at Dixon or Sterling.

A day's drive into Central Iowa will bring the tourist to a point where a short detour will land him at Camp Dodge, at Des Moines, but forty-two miles from the highway at Boone. Variation in the program of military activity is noted at Omaha, where training in aeronautics centers.

Fort D. A. Russell, at Cheyenne, is one of the most interesting of the regular army posts situated on and near the Lincoln Highway. Intermingling with the activities of today, is the memory of frontier episodes of but relatively few years ago, when cavalrymen and scouts rode out across the plains to meet and conquer the war-like red man. A memory of Indian fighting days is furnished at Fort Bridger, Wyoming, and at Fort Steele, this latter post having been abandoned in 1886.

Between Salt Lake City and the Pacific Coast, no military interests are presented for the consideration of the traveler, though a marvelous journey over the desert section of the Highway in Utah and Nevada, and into the splendid, scenic country near the Nevada-California state line, including a trip to far-famed, beautiful Lake Tahoe, may be included. Arriving at San Francisco, the western terminal of the Lincoln Highway, Fort Scott, Camp Fremont and the posts at Bentcia and Monterey will provide a fitting climax for the transcontinental trip of military inspection.

A true conception of the might, earnestness and singleness of purpose of the vast endeavor to provide a fighting unit worthy of the nation, is clearly pictured as the result of this transcontinental trip upon the Lincoln Highway.

DRAIN TILE AND SEWER PIPE.

This year promises to be an exceptionally good one for the promotion of two kindred items of clay products, that of drain tile and of sewer pipe. Drain tile has the logical grounds for promotion that through its use much farming land can be greatly improved and made to produce more abundant crops. There was never a better time, because in addition to the need of abundant crops farmers have prospered as never before, have gotten a price for their product which should abundantly prepare them for carrying on work of this kind and meeting the cost without it being burdensome. So it should be a great year for promoting land drainage.

Sewer pipe and sanitation go hand in hand, also it takes a part in many drainage systems. The army camps themselves have made some demand for sewer pipe, and those who are looking after the health of the nation are so insistent in their demands for proper drainage and sanitary surroundings that if it means anything it means more sewer pipe. There will be more sewer pipe going into rural districts than ever before, and more attention shown to city drainage and sanitation. So the year as a whole should furnish a demand for sewer pipe that will tax the capacity of all the plants in the country. All that seems to be required of those engaged in this industry is steady, systematic exploitation and the necessary preparation to manufacture and distribute larger quantities of their product.

There was no general complaint of the postoffice zone system in connection with the parcels post, but there is need for earnest protest on the part of all the public against the application of the zone idea to publications, because newspapers and periodicals are things which circulate over the entire country and the man at great distance is entitled to his reading matter at the same price that is paid by those near by.

FUEL ECONOMY IN BURNING CLAY PRODUCTS.

We are pleased to publish herewith in full the contents of a most valuable booklet by A. V. Bleininger, United States Bureau of Standards, and A. F. Greaves-Walker, United States Fuel Administration. This is just off the government press and will be mailed later to the clay products manufacturers of the country. It is a most timely, practical treatment of the subject and contains much good advice, splendid instruction, which should be carefully followed by every clay product manufacturer. Remember the slogan, "Save That Shovelful of Coal."

THE CONTENTS OF this booklet were suggested by the necessities of the hour with reference to the fuel shortage brought on by war conditions. The authors express the hope that the simple words employed will enable the kiln firemen as well as the owners and managing heads of plants to gain a better understanding of the subject and cause them all to co-operate to correct fautly conditions which induce waste of fuel. Incidentally it is pointed out that fuel wastage, responsible for curtailed production, disastrously affects business returns as a whole.

IN GENERAL.

At the outset it may be said that there are many ceramic plants where efficiency prevails, and which are controlled by approved methods. Wherever this applies it can do no harm to pass on these suggestions to the firemen as a reminder to do their best at this time of fuel shortage, when a pound of coal *not* wasted means that some one badly in need may have the use of it. On the other hand, the majority of firemen are responsible for much wastage of fuel; sometimes through careless habits, sometimes through no fault of their own, but rather that of the plant manager who fails to provide proper installations.

It is not only the burning crew which should be on the alert, but also the factory manager who has the welfare of his business and his industrial family at heart. Many employers as well as workers have already learned to their sorrow what the lack of fuel means to them.

Let it be the duty of the head of the factory to see to the value he is getting out of his plant and to control its efficiency and encourage approved methods. By following these suggestions he will not only be doing what should be part of his work, but he will also insure a steadier operation of his and indirectly other plants and incidentally help his earnings and those of his employes by maintaining earning capacity, not to speak of easing the burden of those who are charged with the duty of administering fuel and transportation problems.

These elementary lessons are so worded that anyone may understand their meaning and carry them into effect; nearly all of the suggestions involve no great outlay to put into operation. They may be applied without delay and fuel conservation can begin at once.

A plant manager who does not acquaint himself with the fundamentals of burning and who does not co-operate with his burning crew is not competent to be in charge in these times, because fuel is as important as raw materials, labor, or finished products.

Let him familiarize himself with the shortcomings as well as the good points of his plant, and adopt corrective measures where necessary, as well as be able to recognize efficiency where it exists.

By carefully observing the conditions of your plant and correcting faulty installations and methods, you will effect a greater saving of fuel than by shutting down periodically or perhaps by being forced to do so because of necessity born of wasteful conditions, with the advantage of not disrupting your own and other industries.

And bear in mind that you may have to contend with one or more winters of war and the fuel situation may then be as serious as now; hence it behooves you to get busy at once in the boiler room and kiln department. *There is no surer way of gaining compound interest than by correcting wasteful conditions, for waste and loss of net profit are synonymous.*

The following recommendations are drawn up with the idea of showing where fuel may be wasted and in a general way how it may be conserved. Each plant presents its own individual problems, but the principles governing combustion and fuel and the handling of kilns remain the same, regardless of the size or type of plant.

Up to the present time any investment made for the purpose of conserving fuel was decided on the basis of what the dividends would be. *The present crisis has made it necessary to conserve fuel in every way in order that we may stay in business.*

COAL.

When coal is purchased, you receive so many heat units per ton. When this is burnt, some heat units are used to finish your ware and the remainder is wasted. This waste can not be entirely eliminated, but a great part of it can be if these conditions are looked into and followed up in the proper manner.

In normal times coal should be purchased on a basis of its heating value whenever possible. Under the present conditions, however, this is not possible in most sections of the country. *To-day the problem is not so much "how many heat units do I get in the coal which I buy," but rather "how can I get the heat units to do the utmost work in such coal as I am able to obtain." In short, you must take what you can get and make it serve you as well as possible.*

Under any circumstances it can do no harm to make ash and water determinations on each shipment. The information thus gained, if records are kept, will be valuable as a means of comparison.

Remember that both ash and water are waste, yielding no heat, but on the contrary absorbing it. Their content, therefore, should be as low as possible. Anyone can make a water and ash determination by weighing on a grocer's scale, say, 10 or 20 pounds of coal taken in smaller pieces from all over the pile and drying it on top of a boiler or around a kiln. The difference in weight evidently represents the loss due to the water. Subtract the weight of the dry coal from that of the wet, and divide the difference by the weight of the dry coal. On multiplying the result by 100, the percentage of water will be obained. By heating this coal in any kind of tray of burned fire clay, such as a small open pottery sagger, prevously weighed, and placing the whole in a kiln, the amount of ash may be readily determined.

Since the coal proper burns away during the firing of the kiln, the residue which is left must be the ash. Weigh the receptacle with its residual ash. The percentage of the ash is computed as follows: Subtract from the weight of the tray, plus ash, the weight of the receptacle. Divide this difference by the weight of the dried coal as prevously determined and multiply the result by 100. This will give the percentage of the ash in terms of the dry weight of coal.

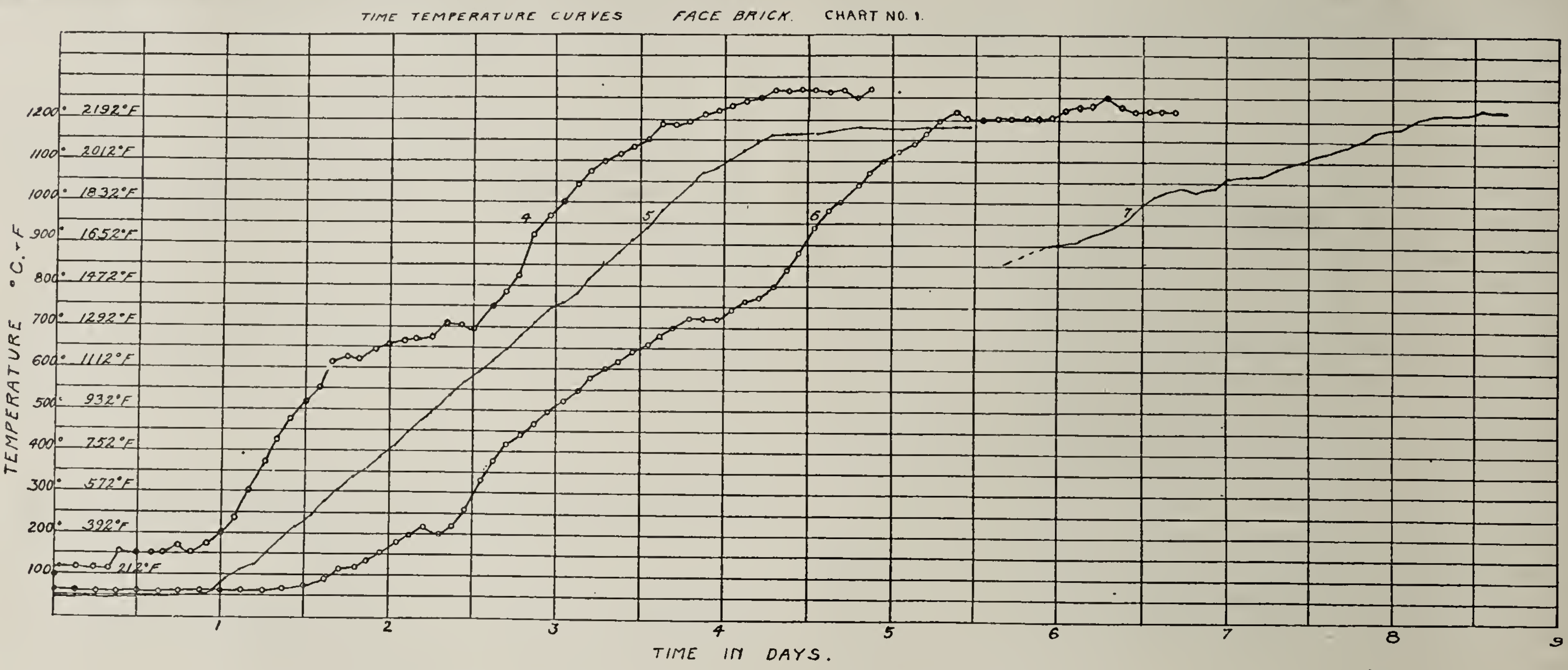
Very useful and interesting information as to the nature of the ash, whether clinkering or non-clinkering, can be gotten by inspection of the residue on the tray. A little experience will show whether or not the coal is getting better or worse with reference to the character of the ash.

Accumulate, as far as possible, coal during the summer to the extent to which you are entitled to it. Do not exceed your allotment. Store the coal as much as possible on paved or board floors, so that it may be easily shoveled off and none be lost by being crushed into the ground by horses and wagons.

Watch the sizing of coal and *use as much slack as possible.*

Many kilns have too much free opening where the side flues beneath the floor enter the main cross flue. Keep the openings of the mid-feather flues as small as possible without, of course, choking the draft. It is the purpose of the kiln bottom not only to bring about proper heat distribution, but also to cause enough resistance to the flow of gases so that the heat will not rush out of the kiln too rapidly. Do not depend on the damper for this purpose, as it alone can not do this work satisfactorily. If your side flues are largest, test this out by paving the bottoms first with one course and then another until the best results are obtained, or simply place loose bricks into the openings leading from the side flues to the main flue, thus partially closing the opening.

Use flat grates wherever possible, as this will enable you to fire with slack or fine coal. The grateless furnace and widely spaced inclined grates should be employed only when the coal clinkers so badly that their use is necessary. Wherever the coal permits it, flat grate bars should replace the other types of furnaces. Remember that it is not what we like to do that is essential at this time, but what we should do to help our country. Portable grates are made which can be wheeled from kiln to kiln.



The fine coal can be worked to advantage for the earlier part of the burn, saving the lump and coarser sizes for the heat raising and the more difficult stages.

Make every effort to know the weight of the coal used for each burn and ton of ware, so that you may know the cost of burning and compare one kiln with another. Without a system of securing this information, all attempts to save fuel will be hopeless.

KILN CONSTRUCTION.

Drain your kiln yard as thoroughly as possible by putting in lines of drain tile or sewer pipe. Moist kiln bottoms mean waste of fuel and time. In down-draft kilns of the well-hole type look for leaks and short circuits to the flues leading to the center. The outside hole between the bags may be too close to the wall and unless the ware is set up close to the wall short circuits between the ware and wall will occur, the hot gases from the fire boxes passing down this space and out through the flue. Bags built over the ends of the flues may not be properly paved and thus cause leakage to the flues, besides representing poor construction. The bag walls should be kept up and not allowed to sag away from the wall, as this is another cause of short circuiting of the fire gases.

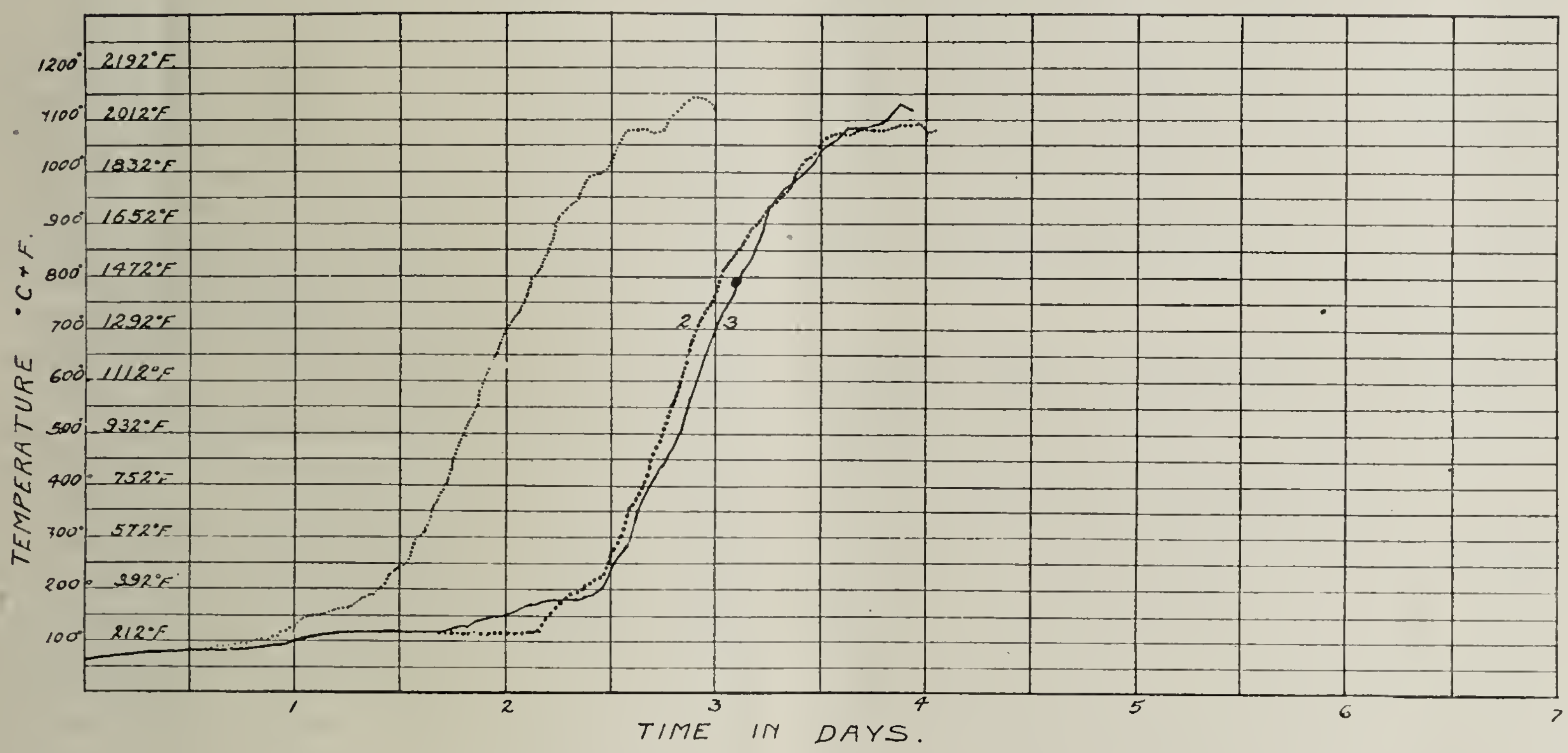
All kilns should be equipped with fire-box doors, and they should be as tight as it is possible to make them. The point is that the inlet of the air above the fires should be under control, so that it may be cut off entirely or regulated to suit the requirements. Common sense, ordinarily close-fitting doors are all that is necessary. *The haphazard admission of air to the kiln is one of the most serious causes of heat loss. Remember that every pound of unnecessary air admitted into the kiln will carry away some of your heat into the stack.* This condition is especially bad in furnaces without grates, where the air is excluded by the banked-up green coal when it is most needed and allowed to enter as the coal burns down, when it is superfluous. The most effective air is that coming through the fuel bed.

Keep up the kiln bracing in good shape, so as to avoid extensive cracking and make all kiln repairs at once. Keep the small cracks inside of the kiln closed by applying a cement consisting of 80 per cent. of finely ground fire bricks (of good quality) and 20 per cent. of strong plastic fire clay. The fire-brick grog must pass through a 20-mesh sieve and the mixture should be made into a thin paste with the clay thoroughly worked up. This can be applied with a broom.

In case the cement should not apply well to old brick walls, add about one per cent. of silicate of soda (water glass) to the mixture. It is also desirable to brush on this cement all over the interior of the kiln and to close in this way many small air leaks, besides helping the kiln wall stand up better in burning.

Since much heat is lost through the kiln crowns, due to their being the thinnest portion of the kiln, it is advisable to cover them with a layer of heat-insulating material, either in the form of the bricks sold for this purpose, or a cement composed of diatomaceous earth (Kieselguhr) with a little clay to cement the mass together. Information as to where such brick can be obtained will be supplied by the Industrial Furnace Section, United States Fuel Administration, upon request. Where such material is not easily available or a less expensive method is desired, bricks made from any plastic clay admixed with 25 per cent. of sawdust (by weight) and burned to the hardness of salmon brick can be made to do, though their efficiency is not nearly as good as that of the special products used for the purpose. For most cases a thickness of about 2 inches of insulation will suffice. Too heavy a layer causes the fire bricks on the kiln face to become too hot unless they are of high grade or low temperatures are used. The more refractory the bricks used in the crown are, the heavier an insulation can be applied. *In all cases it is necessary to waterproof the kiln by the use of a plastering of cement mortar* applied either direct to the insulating bricks or on top of a flat course of bricks laid upon the loose insulation. It would be well also to insulate the kiln walls when constructing new kilns, but usually this is not feasible in kilns already built. *Remember that any hot surface of the kiln continually gives off heat for which you must pay. The cooler the kiln surfaces are the less they lose.*

TIME TEMPERATURE CURVES SEWER PIPE BURNS. CHART NO.2.



Do not allow side and main flues to fill up with sand, as this condition makes for long burns. The flue leading to the stack must be covered tight. Leaky flues make it difficult to control the burns properly. The damper should not be of the haphazard variety, but must fit into its slots reasonably close. This means that it should not be warped. Fire-clay slabs held together by an iron band or by means of rods running through holes in the tiles make dampers which do not warp. Hinge dampers on top of the stack are most effective in controlling draft and are much superior to the usual type of flue damper. The "air damper," which consists of an opening in the stack which is closed or opened as is found necessary, is an inefficient type.

With reference to stacks, it might be said that the ideal layout would provide one large and high stack for all the kilns of a plant. This would make possible the most efficient control of the burning operations. At any rate, the grouping of four or more kilns around one stack is very much to be desired, but the stack should be partitioned part of the height with a separate section for each flue. Cracked stacks should be repaired immediately and if necessary iron bands put around them. A leaky stack causes poor draft and fuel waste. Special attention should be given to kiln having stacks built in the walls. Every effort should be made to prevent the gases from short circuiting through the walls to these stacks instead of entering from the flues.

Setting.

All kilns should be filled to capacity and as nearly as possible up close to the crown and the setting so arranged that the ware may be burned evenly without spending too much time in "soaking."

Much valuable kiln space is lost and much fuel wasted through not filling the kiln to capacity. Experiment and see how high your ware can be set with good results. Set ware well over flue openings close to the wall to prevent short circuiting from bags.

The time of burning with round down-draft kilns may be reduced by setting loose rigs of bricks, three stretchers wide, which will cause the heat to travel downward much faster. To illustrate, in a 32-foot round down-draft kiln two such open rings may be set, the first one facing the bag walls, and the second intermediate between the first ring and the center of the kiln. This mode of setting necessitates "backing out" of the kiln. The heat will travel more rapidly through the loosely set rings and hence the bottom will heat up much faster. The bottom courses of the rings may be set tight in order to prevent the heat from escaping too readily. This method of setting will also prevent high benches from "tumbling." In square down-draft kilns, straight-open set sections may be set across the kiln, likewise, three stretchers wide. In this case also the bottom courses should be tighter.

Do not set wet or partially dried ware, as this practice lengthens the time of burning and increases the fuel consumption. The kiln is a most expensive and inefficient dryer.

Run peepholes through the kiln near the floor in order to determine during the burning how the different parts heat up. The more uniformly a kiln gains heat, the less fuel will be required in burning.

Burning Operation.

The first requirement of successful burning is sufficient draft from the very start. For this reason a kiln attached to a stack already heated will make better time than one starting with a cold chimney. Water-smoking must begin promptly and no time should be lost in bringing the temperature up to 150 degrees F.

The dryer the ware is the more rapidly can the temperature be raised to 220 degrees F., which should be the initial kiln temperature for thoroughly dry goods. A kiln still warm from a previous burn will also permit of more rapid circulation.

When starting with a kiln attached to a cold stack, it is often well to induce draft by building a fire in the bottom of the stack or in the stack flue, or by attaching to the latter a small portable electrically driven fan. Connections can be made from the flue to the fan and back again by means of two sheet-iron goosenecks.

It is obvious that no general rules applying to every case can be given as to the best method of raising the heat during water-smoking, since the kind and size of the ware, the kind of clay, its state of dryness, and the size and type of kiln must be considered. Several examples might be given as to the water-smoking practice used in commercial kilns. In a 32-foot round down-draft kiln set with brick the best procedure was found to be as follows: The temperature is brought at once to 150° F. and maintained at this point for 12 hours; it is then raised to 220° F. in 6 hours and held there for 6 hours. From this point on the temperature is raised steadily at the rate of 25° F. per hour.

In another 32-foot round down-draft kiln, burning building brick, the practice is to maintain the fire in the bottom of the furnace, the coal being off the grate, on the furnace floor for 30 hours, which corresponds to the length of time of water-smoking. In both cases the kilns started with cold stacks. In firing small sewer pipe in a down-draft kiln the initial temperature was 150° F., which was raised to 220° F. in 21 hours, and from here on to 390° F. in 13 hours. In the same kilns large, heavy pipe was raised from 150° F. to 240° F. in 24 hours, and was maintained at this point for additional 27 hours. From here on the heat was raised to 390° F. in 6 hours. Considering the water-smoking period as completed at 390° F., this stage consumed 34 hours with the small pipe and 51 hours for the large pipe.

As a rule too much time is wasted in getting the water-smoking started, principally due to poor initial draft and holding the kiln at low temperature for too long a period. It is very necessary to control the water-smoking temperatures either by means of thermometers made for this purpose, or pyrometers. Without their use the burner is practically helpless, since he either wastes time by being overcautious and maintaining too low a temperature or he may cause serious damage to the war by overheating it at one time or another.

The completion of water-smoking may be determined by inserting a cold iron rod into the kiln flue. A pipe closed at one end and filled with cold water used in the same way gives a still more sensitive test. Moisture on the rod or pipe indicates that the water-smoking is not complete. Completion of water-smoking means that the heat should at once be raised, the most generally satisfactory rate being about 25° F. per hour, up to 400° F. Beyond this point raise the heat more rapidly, say 35° F. to 40° F. per hour. For many clays this steady rate can be maintained throughout the burn up to the finishing or soaking temperature. Clays more difficult to oxidize should be heated up at the rate given above up to 1,300° F.; where the temperature should be held, admitting as much air as possible between fires until the black core has disappeared, which point should be established by drawing frequent samples from the kiln near the bottom. As soon as this condition is reached the heat can be raised quite rapidly at the rate of 35° F. or 40° F. per hour until the finishing temperature is reached, which must be held until the bottom has been uniformly brought to the proper temperature.

For most clays made into bricks by the stiff or soft mud process, and kilns 32-36 feet in diameter, *the time for burning should not exceed five days.* Many plants do as well as this and even better, provided, of course, that the ware is set perfectly dry. Such ware as drain tile can be burned in two days. The one essential point is sufficient draft and ample grate area. Too small a grate surface and poor draft invariably means long firing and large coal consumption, as well as uneven burns. For the average clays used for making the crude clay products the grate area in square feet should be equal to 1.5 per cent of the interior kiln volume in cubic feet. Another method of arriving at this is to allow 1 square foot of fire-box area to from 4 to 8 square feet of kiln-floor area. For refractories the ratio should be 1 to 4, for clays finishing at low temperatures it should be 1 to 8.

Means of Controlling the Burning.

Besides the thermometers used during water-smoking, pyrometers are of very great service in controlling the rate of firing. In fact, by no other means would it be possible to determine this factor. The use of such instruments is essential if the time, and with it the fuel consumption, is to be reduced to the minimum. There are on the market a number of reliable pyrometers, so that no time need be taken up in discussing them. Pyrometer systems should always be installed by an expert. Many outfits have failed through improper installation.

In the majority of cases base metal couples are used in the firing of red-burning clays, and these can be made to give good service, provided they are well protected by means of clay tubes and not exposed to the hottest part of the kiln. Platinum-platinum rhodium couples serve their purpose best when inserted through the crown of the kiln, using a heavy fire-clay protection tube. The base metal couples should be placed in position at the middle or toward the bottom of the kiln. One standard couple should be kept ready for testing the working couples as to their accuracy, since thermo elements undergo constant changes. In many plants the couples are used too long and should be replaced more frequently. Information concerning the making of cheap couples by users of pyrometers (for low temperatures) may be had by applying to the industrial-furnace section. Information concerning the proper treatment of thermo couples, their calibration, and the errors involved in using them may be likewise obtained from the above bureau.

(Continued on page 272.)

THE PLEDGE IDEA SPREADS.

Instead of the pledge to sell only for essential needs, which was handed to the brick industry awhile back, being modified and made easier as most of us hoped it would, the idea is taking root and growing. Other industries are being handed the pledge all around us. Automobile and truck manufacturers have it, and it has extended on down to boot and shoe manufacturers. Cement, lumber, hardware and other building material manufacturers and dealers are being made acquainted with it. And it means that we can get down to essentials voluntarily or be forced to them when occasion requires.

EFFECT OF STRUCTURE ON REFRACTORINESS.

THE AUGUST ISSUE gives information showing the effect of size of grain structure, etc., upon the physical quality of refractory brick. This variation in structure also plays a large part in the ability of the brick to resist heat. This is very well described by Mellor, who states in part that:

"There is an enormous increase in the number of granules in a given mass of clay as the dimensions of the particles are reduced. If the grains of the clay were all of a millimeter in diameter there would be, in round numbers, 720 grains per gram., and if the grains were 0.0001 mm. in diameter, the number would increase to the enormous total of 720,000,000,000,000 grains per gram. Of course, clay grains are not spherical, and they are not all the same size, but there are methods of grading the granules approximately into groups with certain assigned average diameters. The hypothetical case will, however, best illustrate my meaning. Similar remarks also apply to the increase in the number of points of contact of the granules as their diameter is diminished. Reducing the diameter of the grains from 1 to 0.0001 mm. diameter raises the number of points of contact of the grains from, say, 2,160 to 2,160,000,000,000,000, because the number of points of contact of a group of spheres varies inversely as the cube of their radius r is such that nr^3 equals a constant. Consequently, if the vitrification of a clay is the result of a reaction between the surfaces of contact of the granules, the speed of vitrification must increase according to a similar law when the area of the surfaces in contact with one another is augmented. This conclusion is in agreement with some observations made some years ago on the effect of increasing fineness of grain on the fire contraction of clay bodies.

"It follows also that the pressure might be expected to lower the softening temperature of a clay by bringing the surfaces of the granules into more intimate contact. Observations on this phenomenon have showed that with clays of approximately the same grain size the softening temperature is reduced by pressure in accord with the expotential law, Ce^{-kP}, where C denotes the squatting temperature of the clay under no load. P denotes the pressure in pounds per square inch, and k is a constant of the order .001, but which has in general smaller values for silicious than aluminous clays.

"There is a valuable lesson in this discussion. Anything which favors the vitrification of a clay reduces its refractoriness or fire-resisting qualities. Consequently, other things being equal, the coarser the grain of a clay the higher its softening temperature, and the coarser the texture the more refractory the brick. This is very noticeable with high temperature fluxes like mixtures of clay and fine grained quartz, where the temperature of vitrification may be so reduced that the admixture spoils the fire brick. On the contrary, if the quartzose silica be coarse grained, the refractoriness may appear to be improved. Fire bricks made with some clays, with or without fine grained silica, break down at temperatures which they withstand when made from the same clay mixed with coarse grained quartz. There is a precaution: the quartz grains should be angular, and not in the form of rounded pebbles. The reason for this will be apparent on comparing sections of bricks made from the two forms of grog—angular and rounded grains. The angular grains are firmly imbedded in the clay matrix, while the rounded grains are loosely held by the clay bind and are easily picked out. Again, angular fragments pack together more closely with the clay and form a more compact skeleton for the brick than rounded grains."

Machine vs. Hand Made Brick.

This article also takes up the discussion of after-contraction and expansion of burned refractories, effect of reheating on grog, etc., also the effect of chemical content, etc. Mr. Mellor's discussion of the relative qualities of machine-made and hand-made brick is of particular interest.

"There is often a strong prejudice against machine-made fire bricks. It will be readily conceded that a badly made machine brick is in all probability worse than a badly made hand-made brick, but I am not prepared to say that if the necessary precautions are taken in the preparation of the clay as good a brick cannot be made by machinery as by hand. The subject is one that wants careful re-examination. I will try to show that the prejudice is probably the result of an unfair comparison. There is little doubt that when a weathered clay is allowed to stand in a moist condition, it becomes more and more plastic, and it then readily adapts itself to the mold. According to the testimony of old potters, when machinery was introduced for the preparation of the clay body for the manufacture of pottery, there were serious complaints about the low plasticity of the body. The clay was not so buttery and the percentage loss in cracked ware increased. As a result, it was said that machine-made bodies were not so good as hand-made bodies. There are several converging lines of evidence which show that essential difference was not machinery versus hand, but rather depended on the difference in the time the clay was allowed to stand in contact with water.

"There is also a tendency for the machine-made body to be less uniform in texture. Pug mills are not really good mixers. With pugs mixing, say, clay and grog, the eject from the pug has a tendency to be more or less laminated into patches poor and patches rich in grog. The preparation of the clay for hand and machine working usually differs in a way that materially affects its working properties and texture. If the texture of the brick be not uniform it is highly probable that strains will set up when the brick is being heated, owing to a difference in the rates of expansion of the different parts. This will lead to the formation of fissures and cracks, and, maybe, also to spalling. A prime desideratum with machine or hand-made bricks is uniformity of texture. Other things being equal, that process of manufacture which is least liable to yield bricks with an irregular texture will give the best results. In the dry or semi-dry process of machine-making, films of air between the granules prevent their packing together so well as in bricks made by plastic processes, and this again has a tendency to make machine-made brick less sound than hand-made brick. I mention these points, firstly, because they affect the texture of the brick, and, secondly, because when we once recognize clearly the essential difference between machine and hand-made bricks, the difficulties with machine-made bricks will the sooner be overcome.

"The texture of some varieties of natural rock is fairly uniform, but when large slabs are heated they are very liable to split and crack under conditions where a similar material made artificially would remain intact. The trouble arises from the chemical and physical changes which occur in the material as the heat travels from the hotter to the colder sides; e. g., the gradual transformation from quartzos silica, with a specific gravity of about 2.65, to a variety with a specific gravity of about 2.30, involving a 16 per cent. expansion, must produce drastic changes in the internal structure of the material. In the present state of our industry I do not think I can over-emphasize the importance of uniformity in texture, be it coarse or fine.

"A further discussion of fine and coarse-grained fire brick and their application is also of interest.

Coarse Grained Fire Bricks.

"The rule that coarse-grained fire brick usually resist sudden changes of temperature better than those of a closer texture is not without exceptions. We come across a clay every now and again which has the property of resisting abrupt changes of temperature, even when made into refractories of fine texture; and, conversely, we encounter clays particularly liable to crack and split even when coarse grained. I do not understand the difference. The couple of clays which I have met of the former type have been clays fairly high in alumina, and the latter are high in silica, but I am not yet prepared to elaborate this subject. I do know that the idea prevails that such properties depend on mysterious virtues or vices with which particular clays are primarily endowed. The inference may or may not be true. Similar phenomena occur with other refractories—e. g., magnesite. In any case the tendency to split with abrupt changes of temperature can to a certain extent be controlled by keping the texture of the fire brick open and coarse grained.

"Silica brick are particularly liable to this fault, whether they be fine-grained or coarse-grained. The phenomenon is here probably connected with thermal conductivity, the coefficient of thermal expansion, and probably also with the specific heat. The continued expansion of silica grains in silica bricks in furnaces, owing to a slow change in the character of the silica after the brick has been made, accounts for some of the friability of these bricks. In the first fire, the fluxing lime becomes saturated with silica and the mixture sets; if the set of the grains be afterwards forcibly displaced by internal expansions, the binding agent is materially weakened by the disturbance. A high temperature pre-calcination of all or part of the silica would mitigate the difficulty arising from this particular cause. This is done by some manufacturers, but I do not know if the efficiency of the calcination is checked by specific gravity determinations. Silica brick made with precalcined material do not always 'ring' so clearly when struck together.

Fine Grained Fire Bricks.

"Other things being equal, a fine-grained texture gives fire brick the property of resisting abrasion and the attack of fluxes, slags, flue dust, salt vapors, etc. Chemical composition here plays an important part, inter se congruunt similia, confligunt dissimilia—like agrees with like and disagrees with unlike; otherwise expressed, acid bricks resist acid fluxes and basic bricks resist basic fluxes, but acid bricks are rapidly eroded by acid fluxes and basic fluxes rapidly erode acid bricks. Texture is also of vital importance."

Experiments show how corrosive slag will attack bricks with which they are in contact. The molten slag will flow into and corode any weak places, fissures, etc.

"The joints separating the bricks from one another are the weakest places. Here the slag may cut its way until the brick itself is undermined and isolated. Ultimately the brick leaves the setting, rises, and floats on the surface of the slag. Naturally, the use of large brick would lessen the number of joints, but if the slabs be too large they are particularly liable to crack, and a crack may cause more damage than quite a number of joints. This example emphasizes very forcibly the well-known fact that bricks which have to resist the corrosive action of slag should have a close texture and be of uniform size, so that the joints are as small as practicable. The jointing clay should also be chosen so that it quickly vitrifies without cracking and welds the bricks together when the furnace is fired for the first time. If two bricks made with the same material, one made with a close and one with an open texture, be exposed to the vapor of salt for some time, it will appear as if the close textured brick is most attacked, because it will be covered with a thin film of glaze, while the open texture brick will not appear to be so much attacked. However, if two sections be examined it will be found that the vapors have penetrated perhaps half an inch into the open texture brick and not one-sixteenth of an inch into the close texture brick. Presumably, if the action were continued for a longer time, the whole face of the open texture brick would collapse, while that glazed face of the close texture brick would remain intact behind the glazed surface film."

Applications.

We are all aware of the difficulty of laying down general rules with respect to clay, since, taken individually, clays from different deposits have a remarkably varied character. In spite of this, the texture of a fire brick is virtually as important as refractoriness and chemical composition. The texture can be largely controlled by the manufacturer. The consumer has to carefully consider the conditions which prevail in different parts of any particular furnace before he selects for trial particular types of fire brick as likely to suit particular parts of his furnace.

Consider the lining of a blast furnace. The bricks near the top of the furnace are not exposed to high temperatures, but they have to withstand a certain amount of abrasion, impact and change of temperature. The bricks are liable to spalling and disintegration, due, as is supposed, to the deposition of carbon formed by reactions between the iron oxide in the bricks and the furnace gases. Nodules of patches of iron oxide in the bricks are more liable to serious trouble than is the case when the iron oxide is more widely diffused throughout the mass, possibly because, in the latter case, the iron oxides are diffused by the alumino-silicates of the bricks, and they then resist better the action of the furnace gases. The bricks should also be close and compact, such brick are usually tough and are not so permeable to gases. The temperature conditions become increasingly severe in descending the furnace. The upper parts of the lining are normally protected to some extent by the development of such film of carbon, but the friction of the descending charge and the impact of fine particles of solid carried forward by the blast may produce erosion, particularly if concentrated in local parts. The brick in the mid zone are also exposed to the slagging effect of particles of salt and other basic fluxes from the coke, etc. There are no very abrupt temperature changes so that a close-texture compact brick is desirable for this region. The conditions which prevail in the harsh and bosh require a very special brick to withstand high temperatures to resist the scouring action of highly basic molten slag, and a rather heavy mechanical load; the volume changes should be small, since the brick must be tight without leakage; but there is comparatively little wear and tear by abrasion. The stove brick should have a high thermal capacity, so that they can absorb and give up the largest possible amounts of heat and be capable of resisting the sand blast action of flue dust. I do not know if the former quality can be controlled by the manufacturer, although the remarkable rise in specified heat of fire bricks with temperature is worthy of note. It will, however, be clear that the mechanical resistance of a fire brick to the cutting action of swift streams of flue dust can be to some extent controlled by the manufacturer. The chemical resistance of a fire brick to different types of flue dust is largely determined by the chemical composition of the fire-clay — excluding, of course, the case where special basic bricks are required. For instance, other things being equal, ferruginous coal ashes in a stream of burning producer gas will have a more severe action on silicious than on aluminous bricks.

Other furnaces might also be discussed in a similar manner. The special conditions which prevail in particular furnaces or in particular parts of a furnace must be approximately known before an attempt can be made to indicate the type of fire bricks likely to prove most suitable."

BOILER WALL REPAIRING.

Because of the shortage in fuel and the general concentration of attention on boiler furnace efficiency, there is unusual interest attached right now to the subject of boiler wall repairs, and there will probably be more tearing down and reconstructing of boiler furnace walls than we have ever had before. This work calls into play not only fire brick and other refractory material for linings, but it also makes a demand for the common brick used in boiler wall construction. And plainly this is one use of brick and clay products that can without question be classed as a necessity.

It is interesting to note in this connection that the fire brick and refractory material men are awake to the situation and are making the most of conditions to push their wares. In the leading stationary engineering trade papers one can see along with the offerings of new things in grate bars and furnace equipment to aid efficiency a fair share of advertisements of firebrick, block and other refractory offerings for furnace linings. One of the strong features is in special offerings for baffle walls for water tube boilers, and in arch blocks. Also one sees special paints advertised for stopping the pores and cracks in brick walls, yet not much is said, or to be seen about brick for the structural part of these furnace walls. Perhaps this is largely because the structural brick are generally obtained locally while the refractory material may often come from a distance.

There is no doubt, however, about it being a good time to give some special attention to the possible needs for clay products of the structural class in boiler wall repairs and reconstruction as well as to the refractory material used for the linings. The cement people never let slip an opportunity to push their product, and it has entered somewhat into this boiler wall work notwithstanding that brick is admittedly a better product. Let us look after this wall business not only to supply the present needs, but for the good of the future.

Incidentally this great call for boiler furnace improvement is adding materially to the call from this source for fire clay products. We think of these mainly in connection with the metal industries, and it is in the metal industries that we have the greatest call for fire brick, but this boiler furnace call today is an item of considerably more importance than it ever has been before and it merits more than the usual amount of attention from the refractory people.

A BOON TO SOFT MUD BRICK MANUFACTURERS.

The Dickinson Carrier and Brick Setters, a Time and Labor Saving Device of Immense Value to the Makers of Building Brick.

THESE ARE TROUBLOUS TIMES for brickmakers. One of the chief sources of trouble in the operation of brick plants is the scarcity of labor; hence on this account, the eyes of the craft are turned toward labor saving devices, and the inventive genius of our designers has been centered in the same direction with good results, of course, for American ingenuity is always equal to whatever problems are confronted. Necessity is the mother of invention, and the necessity for a mechanical means of handling soft mud brick is keenly felt by every one in the industry.

Common building brick is one of the most important branches of the clay business and a large per cent. of the plants the country over make brick by the tempered clay process, mainly for the reason that vast deposits of clays suitable for that process are found throughout the country. The nature and character of the soft clay process has heretofore necessitated the use of hand labor to a large extent. This now may be reduced to a minimum by a device invented by W. W. Dickinson, Jr., of Little Rock, Ark. It is a mechanical carrying and setting device which takes the brick from the machine on pallets and sets them in the dryer or kiln untouched by hand.

The machine is an adaptation of a sucessful setter and carrier, which Mr. Dickinson has been using on his stiff clay brick plant, and which is illustrated on Page 222 of this issue of The Clay-Worker. The adaptation of this machine to the soft mud process is a very clever piece of mechanical invention, and marks an epoch in this branch of the brick industry. It is a complete automatic setting device, which takes the pallets carrying the brick from the machine to the point desired, and then returns the empty pallets to the machine. It works best and with the least expense in connection with the rack pipe dryer.

One machine will set 200,000 brick in eight hours. Four men unload the pallets and set 100,000 brick in eight hours. If the clay will stand drying in the kiln the Dickinson setter with four men will handle 100,000 a day, placing them in the kiln without touching the brick by hand.

Practical manufacturers will readily perceive that this results in great economy. The machine will be ready for delivery December 15. Brickmakers contemplating improvements and re-equipping to meet the immense demand that will come with the end of the war should investigate the merits of this new device. It is thoroughly covered by patents issued and pending. For further particulars, address W. W. Dickinson, Jr., Little Rock, Ark.

Leather belting costs so much money these days that abuse and careless use should not be tolerated, but the best possible service secured out of what is being used.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXIX.

Open Top Continuous Kiln (Continued).

THE K. W. KLOSE kiln is a modification of and improvement on the Bock kiln, and is illustrated in Fig. 60 (cross-section), Fig. 61 (longitudinal section) and Fig. 62 (view plan). The draft outlets are a series as in the Bock kiln, except they are larger in size, not so closely spaced, and are placed midway in the vertical kiln wall. (Note.—In the Bock kiln we have many small draft openings immediately under the platting; the Klose kiln has fewer and larger draft openings approximately midway between the platting and the kiln floor; the Chmelewski kiln has a single draft outlet for each section located near the end of the section on the kiln floor. With such extremes in existing types of the open top kiln, one would conclude that the success of the kiln depends more upon skillful operation than on the design.) The parallel tunnels are connected at the ends by flues instead of continuing the tunnels across the ends. The central flue is the main draft flue, with a stack or fan at one end of the kiln, and connections to this flue and the kiln outlets are by means of portable goosenecks. In the outer walls are openings corresponding to the draft outlets in the inner wall, and these connect with an underground advanced heat flue (completely surrounding the kiln, the continuity of which is broken at each end by dampers.

The bricks are set in the usual manner with longitudinal ("trace") flues in the bottom corresponding to the openings in the end walls, and vertical flues connect these bottom flues with the platting feed holes.

The operation is the same as in the Bock kiln, or any direct coal-fired ring kiln, the processes of drawing, setting, platting, cooling, burning and heating up being continuous and advancing section by section.

The initial water-smoking is independent and is done with hot air from the cooling sections. The water-smoking sections are separated from the heating up and setting sections by paper shields pasted to the bricks. Cooling sections of the kiln are connected with the advanced heating flue by goosenecks, and at the same time the draft outlets in the inner kiln wall are connected by goosenecks with the main draft flue. The hot air from the cooling sections is drawn into the advanced heat flue and is by-passed therein direct to the water-smoking sections ahead of the heating up chambers or backward around the drawing and setting sections, as may be the shortest cut, and the dampers in the heating-up flue give this control. The goosenecks connecting the water-smoking sections with the heating flue introduce the hot air into these sections, and similar connections with the draft flue on the opposite side of the water-smoking sections complete the circuit to the fan.

Fig. 62 illustrates the advanced heating flue for water-smoking applicable to the kiln in question, and to any continuous kiln, with such modifications as the kiln construction may require.

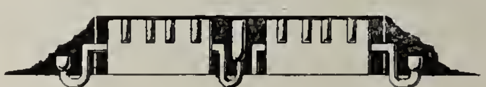


Figure 60.

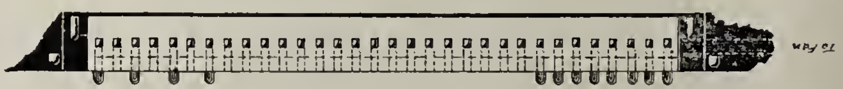


Figure 61.

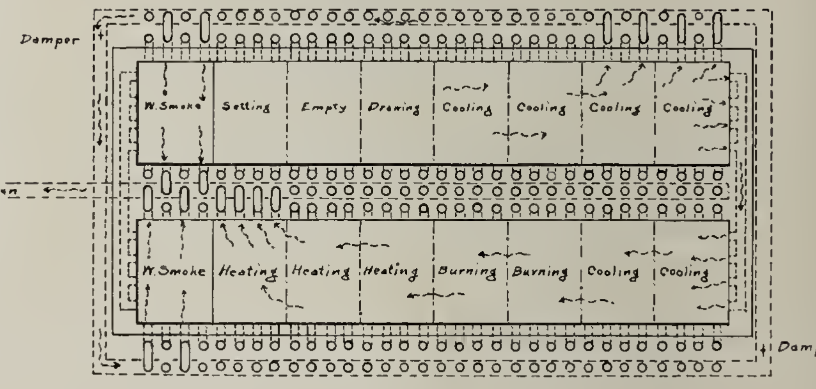


Figure 62.

A chambered type of open top continuous kiln, in principle, is shown in Fig. 63 (longitudinal section), Fig. 64 (cross-section) and Fig. 65 (plan).

The usual method of building this kiln is to have each row of compartments in a separate battery with working space between. The main draft flue will then be underground between the two batteries of kilns. The transfer tracks from the dryer will be centered in this working space, with stub tracks into each compartment.

The burned ware is removed through doorways in the opposite ends of the compartments. The ware is set in the usual checkers with feed holes coresponding with holes in the platting, and is direct coal fired. The bricks may be set 38 to 42 courses high and burned hard from top to bottom. One installation of a somewhat similar type of kiln uses producer gas, but the kiln is best adapted to direct coal firing. This kiln has shown very satisfactory results and extended use of the kiln is promising.

Periodic Crowned Updraft Kilns.

A crowned updraft kiln is seldom used in the ceramic industries except in burning pottery. We see no reason for the extensive and continued use of the updraft kiln in the pottery industry, except that the operation is largely controlled by tradition. In the near past to ancient times it has been an industry of secrecy, of formulas handed down from father to son for generations, of processes carefully guarded, and the up-draft kiln, adopted in the early periods of the industry, has come down to the present time along with the other features of the work. There may be good reasons for the continued use of this type of kiln for this industry, but we fail to appreciate the full force of them.

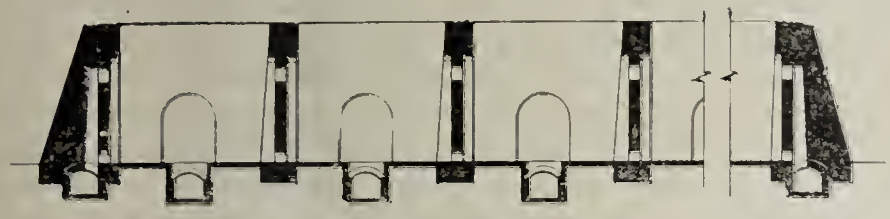


Figure 63.

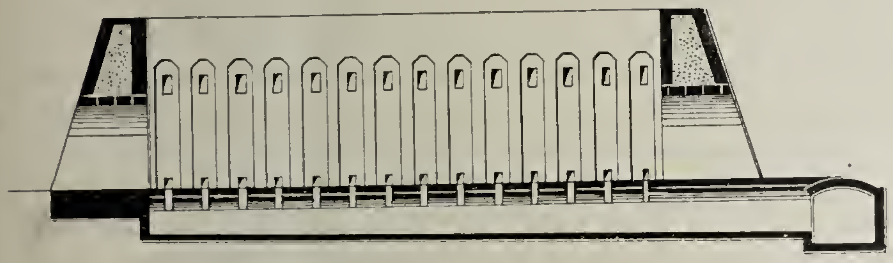


Figure 64.

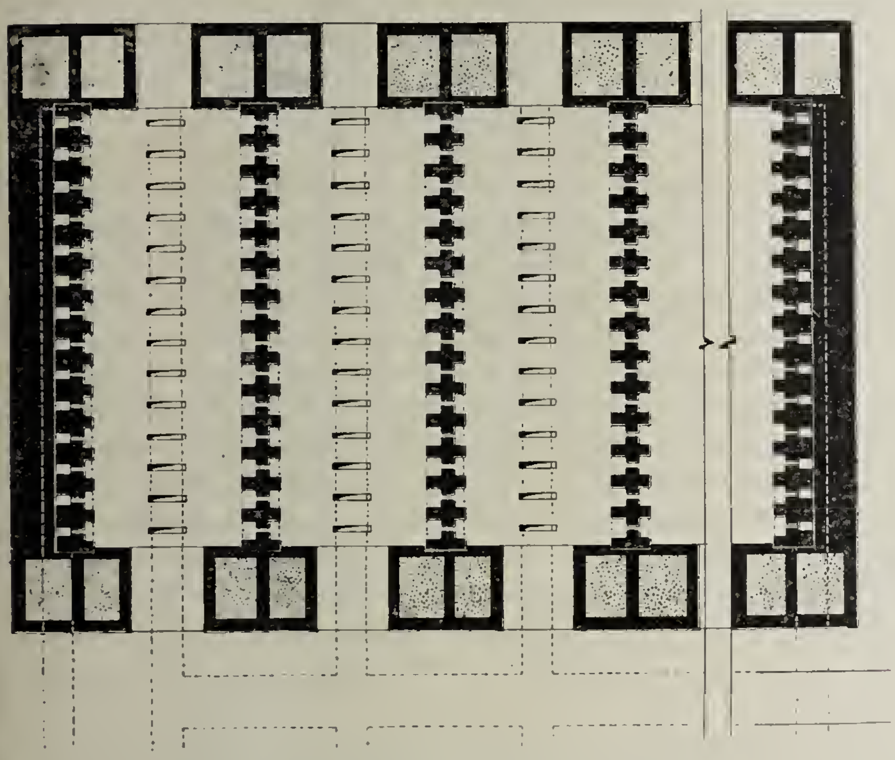


Figure 65.

The fires are below the floor level and a portion of the gas passes through flues under the kiln floor and rises through a center well hole in the floor, then upward among the ware, and escapes through a vent in the crown. Low bags inside the kiln, connecting with the furnace throats, direct a part of the gas from the furnaces upward into the kiln space, and from the top of the bag the gas takes a vertical and diagonal course to the draft outlet in the center of the crown. Thus we have a volume of gas rising from the center well hole in the floor and volumes from each bag. In some instances there are a series of holes in the floor introducing the gases into the kiln.

Montgomery and Gray, in Vol. XIV, Trans. American Ceramic Society, present data relative to the fuel consumption in up-draft and down-draft pottery kilns. Gray shows a fuel consumption of about 9 tons of coal per burn in four up-draft kilns, for temperatures of cone 8, and Montgomery gives the same tonnage in a center-stack down-draft kiln, burning to cone 11. The kilns are practically the same in cubic capacity.

A single instance is not sufficient evidence of the advantage of one type over the other, nor do we consider the small difference in fuel as an important item. The uniformity of burn is the chief concern, and we are of the opinion that the down-draft principle will make the best showing in this respect. Watts, in Vol. V, Trans. American Ceramic Society, makes the statement: "Any one who has studied the workings of an up-draft white ware kiln knows that the outside ring is solid-flat ware. Between this and the center is a great area that is too soft for flat ware and too hard for hollow ware. The ware taken from this area is never right. Why can we not use a center-stack down-draft kiln, which will give uniform results, and burn only such ware in a kiln as can be all burned at the same temperature?"

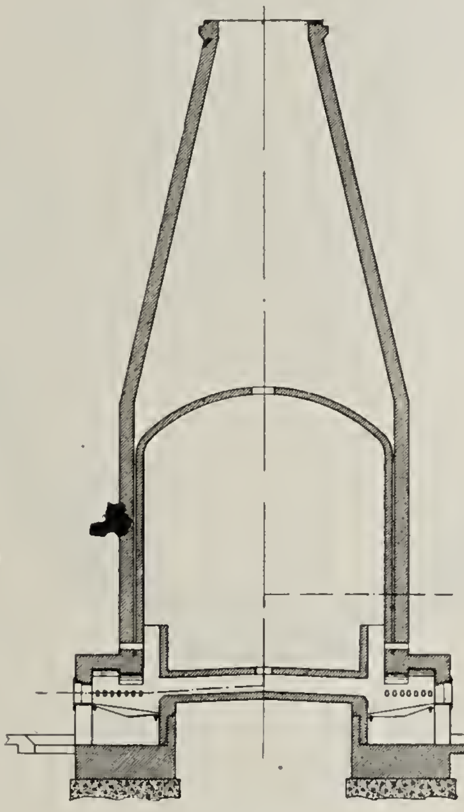


Figure 66.

From an engineering standpoint, without reference to pottery ware, the down-draft principle has a decided advantage over the up-draft.

The first objection to the up-draft kiln, it seems to us, is the cost of maintaining the under floor flues, subjected, as they are, to high temperatures and carrying the load of the ware. This objection has had effect on the development of under floor fired kilns for the common ware industry, and many up-and-down-draft kilns have been converted into down-drafts on this account, although a number of them gave very uniform results.

The floor of an up-draft kiln or any under floor fired type must be above the factory floor level, and all the ware has to be carried up into the kiln and brought down after being burned, thus increasing the labor cost.

The radiation loss from any kiln is greatest from the crown. It is greater from the crown of a down-draft kiln, because the temperature of the gases under the crown of a down-draft is higher than that of an up-draft, and, considered from this standpoint alone, the up-draft kiln would show economy in fuel, but the purpose of a kiln is, first, to burn the ware uniformly, and fuel economy is of second consideration. It must be remembered that while the radiation from the top of a down-draft kiln is greater than in an up-draft, the conduction losses on the bottom are less. The top of an up-draft kiln is most distant from the source of heat; the gases there have a minimum temperature and a maximum radiation loss. The down-draft kiln has a maximum temperature in the top to offset the radiation loss. The bottom of the kiln, where the temperature of the gases is the least, has a minimum radiation (conduction) loss, and besides has the benefit of the ring of furnaces around the base of the kiln. The burning of open-set ware is materially advanced by pressure. We can get hard ware under weight in the bottom of the kiln at a lower temperature than we can in the top of a kiln where the product has no superinduced load. This, of course, is of no consequence in pottery ware enclosed in saggers, but it is important in burning common wares which are stacked up in the kiln, one piece on another, the load increasing from top to bottom. Finally, another difficulty of the up-draft kiln in burning common ware is that the proximity of the ware in the bottom of the kiln to the fires subjects it to an intense heat and to reducing conditions. The former intensified by the overburden carried by the bottom ware results in over burned, distorted ware, and the latter causes discoloration.

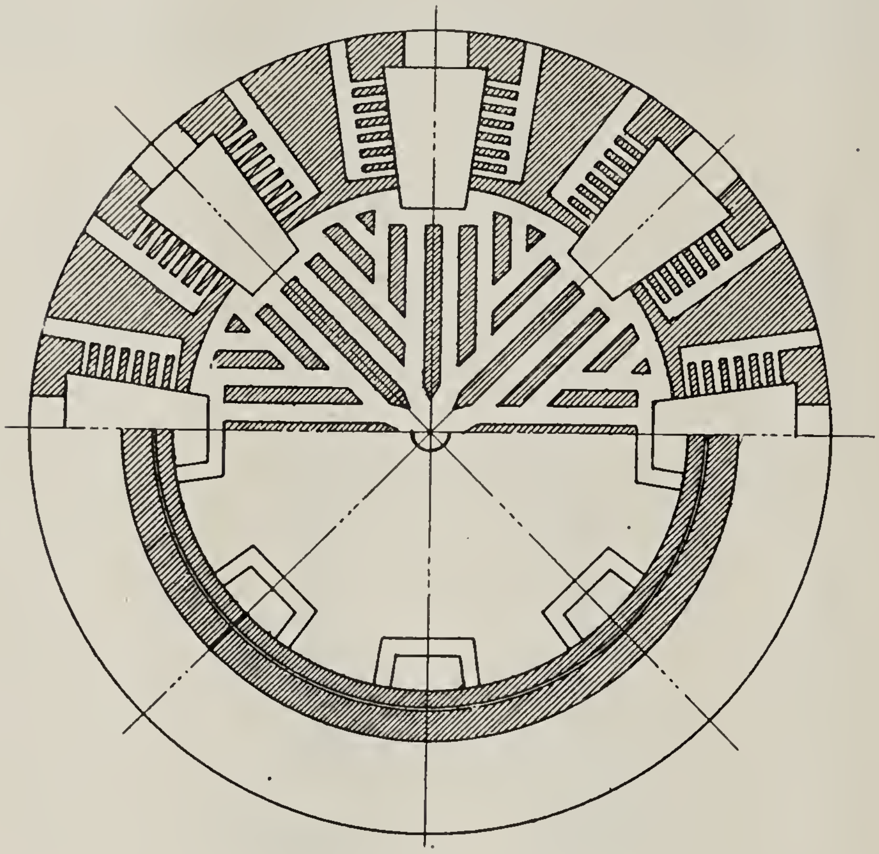


Figure 67.

We can get more uniform common ware burns in down-draft kilns than in up-draft, and the latter type of kiln is seldom found except in the pottery industries including abrasive products.

We have seen one or two fire brick up-draft kiln installations which were scarcely more than crowned "up-draft" kilns. The crown replaced the platting, and the arches were permanent trenches stepped over with the fire bricks to be burned.

Fig. 66 (plan) and Fig. 67 (sectional elevation) illustrate an up-draft pottery kiln, after Riddle, Vol. XIII, Trans. American Ceramic Society.

(To be continued.)

The average clayworker cuts a new set of eye teeth about every year, and sometimes it is a rather painful experience.

BRICK HANDLING METHODS AND DEVICES.

In a supplement to American Industries devoted to the subject of safety in brickmaking the charge is made that in most plants building hazards and general housekeeping methods on the part of the brick industry present a problem of more importance than that of new or additional safeguards around machines themselves. It is pointed out that most of the machinery people are prepared to furnish standard safeguards for the machines themselves, and what the brick men need to do is to give more attention to the everyday surroundings.

Two things are mentioned specifically. One is that workmen are required to move wheel barrows and trucks over poorly improvised floors and runways when concrete walks would be safer and cheaper in the long run. The other is the lack of sufficient lighting in many places.

It sounds like rubbing it in to tell a brick man to use concrete, and it is very probable that the writer in this case may have had building operations confused with brick handling at the kiln, or had not been around kilns recently where the gravity conveyors take the stock out of the kilns and do much of the conveying formerly done by barrows and trucks.

Still, if it stirs the trade up to the use of better methods and modern devices for handling clay products, some good will be accomplished. There are some plants, too, here and there where much improvement might be made in runways for barrows, and it is time for the owners to wake up and get busy at improvements. Manual labor is too scarce and costly today to be uselessly expended, and there are probably many opportunities around brick plants to improve the situation as much by a general overhauling in this respect as by the adding of new machinery.

If equipment is not arranged in accordance with the sequence of operations, as is charged incidentally in this discourse, it is time to get busy at a re-arranging of the plant equipment so as to shorten the steps and reduce the amount of work necessary to produce and handle a given amount of brick. Improvement in runways and surroundings generally can usually be made without any great expense or buying of new material and equipment, and now is a mighty good time to give attention to these things.

It is also a good time to repair and put in order the lesser equipment, including barrows, as well as the machines, and to add such conveying appliances as may promise to help out in handling the product. We are so short of man power that to conserve man power is essential now, and in the future, when the rush comes, the improvements will readily pay for themselves by helping to increase production.

CORN VERSUS CASH.

A story is told of a farmer who recently priced a buggy. When the dealer told him the price was $90.00 the old farmer raised an awful fuss. "Why, dern it," he expostulated, "I bought that same buggy from you ten years ago for $60."

The dealer, who ran a general store, looked back in his old ledger and found that he had sold the buggy in question for 120 bushels of corn. He shut the countryman up in a hurry when he offered him the following merchandise from his stock for 120 bushels of corn today:

A buggy at	$90.00
A set of harness at	20.00
A suit of clothes at	25.00
A hat at	5.00
A box of cigars at	5.00
Groceries at	35.00
Lubricating oil at	10.00
	$190.00

APROPOS SUGAR CONSERVATION.

That the restaurants in mining districts are aiding the sugar conservation program is illustrated by a sign which appears in a restaurant near Tonopah, Nev. This sign reads: "Use only one level teaspoonful in your coffee. Don't be a U-boat—so stir like hell, for we don't mind the noise."

CLAY EXHIBIT AT CHEMICAL EXPOSITION.

Dr. T. Poole Maynard, geological and industrial engineer of Atlanta, Ga., will have booths 234 and 235 at the Chemical Exposition in the Grand Central Palace, New York City, the week of September 23d, where he will have on exhibit clays of the Interstate Clay Company and the Southern Ball Clay Company. Both of these companies make a specialty of the supervision and standardization of raw materials for use in the manufacture of clay products. Dr. Maynard will be very glad to welcome any one interested.

USING WASTE HEAT FROM GAS ENGINES.

For a considerable time the waste heat from steam engines has been turned to good accounts, but there have been difficulties in using the exhaust gases from a gas engine, as they readily attack the metal of the conduits, says the Popular Science Monthly. However, the difficulty is being overcome, for a New Jersey candy factory has an installation in connection with a 60-horsepower engine which is used to heat the factory. The gases pass through an economizer made of cast iron, with the passages to the different sections staggered so that all parts are heated for the whole length. Water circulates in jackets surrounding the gas passages.

TAX ON LUNCHEON BILLS.

A Youngstown (Ohio) concern has originated a novel manner of conducting its cafeteria in such a way as to encourage food conservation. A half dozen men in the General Fireproofing Co., at a luncheon at the plant recently decided that they were eating too much. In order to make it an object to eat less the following rules were adopted: Any member of the club who has a lunch check for 20 cents or less contributes 5 cents to a general savings fund which reverts to him in the form of thrift stamps. A 20 to 25 cent check requires a 10-cent tax. A check for 25 to 30 cents requires a 15-cent tax. New members joining the club pay an initiation tax of one thrift stamp. This concern conducts its own kitchen and dining room and sells at cost to employes. The tax plan is expected to promote economy in food and to provide a thrift stamp fund as well.

PREFERENTIAL LIST OF INDUSTRIES.

Instead of listing some industries as non-essential, the War Industries Board has gone at the matter the other way around and has listed in four groups those industries which are to be given preference in the matter of raw material and fuel. Quite a number of industries are grouped in each of the four clasess. In the first class or group goes munitions and those allied things of which we must have no curtailment. And all in this group will be supplied before attention is given to others. Beyond the first group, however, the method of distribution changes; that is, group two, for example, will not have to be fully cared for before anything is available for three and four, but distribution will be made among all the three groups in accordance with the needs and importance in each case. Firebrick is the only clay product mentioned specifically as coming in the preferred list, it being in group four. Chemical plants are in group one, and we may presume that this will also cover those clay products used in these plants.

THE LETTER "E."

It is the most unfortunate letter in the alphabet, because it is constantly in "troublE," always out of "cash," forever in "dEbt," never out of "dangEr," and frequently in "hEll." But it has its good points, too: You never find it in "war" but it is always prominent in "pEacE." It is the beginning of "Ease" and invariably puts an end to "misfortunE." Without it we would have neither "wintEr" nor "summEr." "LifE" would be a joke and "hEavEn" nothing more than a temporary harbor. The middle would drop out of "bEd" and "slEEp" would be impossible. It is the center of "honEsty," the alpha and omega of "ExcellencE."

PASTE THIS IN YOUR HAT.

Then, when you run across Mr. Wiseheimer, who thinks he knows all about modern military organizations, remove your skypiece and set him right by reading the following facts to him:

An army corps is composed of 60,000 men. It is commanded by a major general.

An infantry division is 19,000 men.

An infantry brigade is 7,000 men. It is headed by a brigadier general.

A regiment of infantry is 3,000 men. It is commanded by a colonel. A lieutenant colonel ranks next below him.

A battalion is 1,000 men, and is headed by a major.

A company is 250 men, commanded by a captain.

A platoon is 60 men, in charge of a lieutenant.

Non-commissioned officers are sergeants and corporals.

A corporal's squad is 11 men.

A firing squad is 20 men.

A field battery has 195 men.

A supply train has 283 men.

A machine gun battalion has 296 men.

An engineers' regiment has 1,098 men.

An ambulance company has 66 men.

A field hospital has 55 men.

GETTING BRICK LORE TO LUMBER DEALERS.

While the lumber producer will not profess much interest in brick—except when he needs a really modern dry-kiln building—the lumber dealers, the retailers, are taking more interest in the subject each year. And incidentally some of the lumber papers are helping to carry brick lore to the dealers. An interesting case in point is a feature article in one of the papers going to retailers, by an architect, which deals at some length with the matter of brick and how to use them. It includes a brief description of the different methods of making brick, illustration of different mortar joints used in laying brick, a statement of brick sizes and a table showing the number of brick required for walls of different thickness. It is a bit of good work that shows the way the wind is blowing in the building and building material line. Also it carries the hint that the brick manufacturers themselves may help the cause along by getting in closer touch both with the lumber dealers and the building contractors, and putting before them in attractive form just such information as this. Getting brick lore to dealers and to builders is half the battle for wider brick progress in everyday building operations, and a little seed planting in this ground now will help enlarge the harvest to come when the war is over.

MACHINERY PROSPECTS IN SOUTH AMERICA.

THERE is in hand consular reports concerning the markets for brick machinery in Argentina, Brazil and Uruguay, South America, which among other things give an interesting account of brick making and usages down there. Two of the outstanding features of all these reports are: the localizing of brick making because of lack of transportation, and the plastering over of the outside brick walls instead of using the brick face itself for architectural decoration. To offset these two apparently discouraging features we have the statement that brick building is the rule down there, very little wood building being done. So eventually there should be a worth while market for brick machinery, and an awakening to the use of face brick instead of rough hand-made brick to be plastered over.

Brick Making in Argentina.

Beginning with Argentina, we have this summing up: "The fact that there are so many small brick kilns in Argentina, representing practically no capital and employing cheap labor, the fact that these brick are very suitable for the plaster faced walls, and the fact that railway freight rates are very high, do not make the prospects for the general introduction of brick machinery into Argentina at present very encouraging. Representatives of large concerns here selling American machinery are of the opinion that there is no market here and that there is not likely to be a demand for machinery for the manufacture of brick. Machinery for making tile, cement blocks, and concrete mixers seem to have a better outlook.

"That there will be a great deal of building construction work done at the conclusion of the war is freely predicted. Bank deposits were never so large, the farmers having been receiving unheard-of prices for their products, and they should be in position to improve their properties. The value of Buenos Aires real estate, especially in the downtown district, is too high for the owners to be content with getting only a nominal income from their one and two-story buildings."

Cement Competition.

This is the summing up of Vice Consul Francis B. O'Grady, of Buenos Aires. Yet as a prelude to this, he says that buildings in Argentina are generally made of brick, a rough, cheap, hand-made brick, the walls being faced with a thin stucco plaster.

It is perhaps well to interject right here a little consideration of this point. The fact that the walls are plastered over for finish makes a preference for the rough hand-made brick to which the plaster will adhere more readily. Also the prevailing practice of using plaster makes a sort of a naurally favorable leaning toward concrete construction. It is not surprising, therefore, to learn that an American company has completed a large cement factory down there and is expected to push the concrete idea.

One cheerful note comes from an incidental mention of a tendency among the younger architects toward the use of more pressed brick fronts and less plaster facing. It is cement that will have to be met in competition down there, and under the circumstances the first good work to be done is plainly that of awakening more interest in the natural beauty of brick for face work. Those young architects should be encouraged and assisted to the end that the beauty of brick itself may become properly appreciated. The right start will be made toward the developing of brick making down there along modern lines.

A Chance for Simple Machines.

We are told that there are some machine-made brick in Argentina, but not very many, for the cost is so high when transportation is added that they cannot meet the competition of hand-made brick. There is a suggestion that simpler and lighter machinery equipment for small yards may find a market, but it will take time and many changes to open a wide market for equipment for the larger plants. At present there is but little shipping of brick down there. More often the brick maker takes his men and tools right to the neighborhood of the building to be done and makes the brick from the material at hand, doing the making and burning in a primitive way. They do this notwithstanding that good clay is often not obtainable. They use a common black soil—whatever can be had that is best in the neighborhood—sometimes mixed with small quantities of horse manure or sawdust (and straw, evidently).

Brazil a Brick Building Country.

Vice Consul Richard P. Momsen, Rio de Janeiro, writes that practically all buildings in Brazil are constructed of brick or stone, and but few are made of wood. With these conditions prevailing the consumption of brick is proportionately much greater than in the United States. According to his estimates there appears to be something near two hundred clay working plants in Brazil, with a total capital of near four million, and an annual production of upward of 31 million brick. It is calculated that in supplying the market of Rio de Janeiro there is a call for more than 10 million hand-made brick a year. Also he mentions a growing interest in hollow brick, but does not give description enough of this to identify it positively.

He says:

The bricks mostly employed for building purposes vary from 20 to 23 centimeters in length, from 9½ to 11 centimeters in width, and from 6 to 7 centimeters in height (1 centimeter=0.3937 inch).

Bricks are manufactured in every part of Brazil, where there is an abundance of raw material for this purpose to be found in almost every locality. The domestic factories take care of the entire consumption of the country, no bricks of the ordinary building type being imported. There are numerous factories throughout the Republic where bricks are manufactured by hand. The greatest drawbacks of establishing large brick factories at centers of production are the high freight rates on railroads and the state export taxes. Prices of bricks vary considerably, but a fair price of production at present is estimated at about $4.25 in American currency per thousand at the factory.

Foreign Machinery Used.

The greater part of the machinery imported thus far in the manufacture of bricks has been imported from England, France and Germany, the American machines being practically unknown.

Building operations have been somewhat limited owing to the difficulties in obtaining cement and steel structural materials from abroad. Once these limitations are overcome and building operations are carried on in proportion to the present progress of the country in industrial and other commercial enterprises, there should be a greater demand for bricks and brickmaking machinery. A recent visit to a large American packing establishment near Sao Paulo revealed that although steel structural beams could not be purchased at this time, native peroba wood could be satisfactorily substituted, and this is being done in one of the buildings that is nearly 800 feet in length and five stories high. The writer was told that over 10,000,000 bricks would be used to complete all of the buildings of the proposed plant.

Brickmaking machinery is subject to an ad valorem duty of 15 per cent, 55 percent of which is payable in gold, bringing the actual rate assessed to almost 30 per cent ad valorem, when all of the additional taxes and charges are included.

Imported bricks can not compete with the native article, as the import duties, according to a manufacturer here, are assessed at the nominal rate of 25 milreis (about $6.25 in American currency) per thousand, the actual duties payable coming to over $10 per thousand by reason of the part payable in gold, port charges, etc.

The Outlook in Uruguay.

Consul William Dawson, Montevideo, Uruguay, says that most of the building in that country is done with brick. Some structural steel, some lumber is used, some corrugated iron for warehouses, and concrete is making progress. But the majority of the buildings are made of brick, and he says that brick is undoubtedly the structural material for which the demand is largest. Brick are used for interior and exterior walls, for filling in between I beams in floors, and also very extensively for walling in property.

With the exception of firebrick, which in spite of experiments has not yet been successfully produced in Uruguay, practically all brick used are made locally. He reports twenty or more brick plants at Montevideo and more in the interior of the country. In fact, wherever there is sufficient local demand to warrant a brick kiln is installed and brick made in a primitive way. As respects quality of product and methods of manufacture, a distinction is made between the small establishments and those equipped with machinery. It is the small plants, of course, that are now most numerous, but many of them are short lived—passing when the community need for brick ceases. In the absence of authentic statistics, Consul Dawson estimates that in normal years Montevideo consumes from 80,000,000 to 100,000,000 brick annually, and the rest of the Republic somewhat less.

Machine-using Plants.

Of concerns using machinery he says, three such plants are to be found at Montevideo and three or four more at interior points.

The largest plant, located at Montevideo, has a capacity of 8,000,000 bricks a year and turns out 44 different types of brick, all, however, of the same material. The equipment, purchased in Germany at a cost of about $25,000, was installed in 1911 and is said to be very complete. (This plant has been closed now for about a year, largely owing to the high price of coal.) The two other plants at Montevideo using machinery have a capacity of from 2,000,000 to 4,000,000 bricks a year. Their equipment was picked up to a large extent locally, and in Buenos Aires, some of it second-hand. Brickmaking machinery used at Montevideo consists of hoppers for mixing, cutting appliances, presses, conveyors, natural and artificial drying rooms, etc.

A brick factory at Paysandu is equipped entirely with American machinery purchased about 10 years ago directly from the manufacturer. The plant does not operate regularly owing to the small local demand, but has a daily capacity of 50,000 bricks and an annual output of about 2,400,000. The equipment consists of track cars drawn by a hoist, a grinding mill, mixer, and press, and up-to-date ovens and drying sheds. A factory at Salto likewise has American equipment, bought directly from the manufacturer, and consisting of a boiler, horizontal one-cylinder steam engine, large automatic press, mixer, form cleaner, and transport gear. The factory has turned out 6,000,000 bricks in a year and has a daily capacity of 50,000. Like the plant at Paysandu, it does not operate continuously. Both plants are closed at present.

As intimated above, it is understood that there are one or two more brick factories in the interior using machinery. It has not, however, proved possible to obtain information on this point.

Future Prospects.

As respects the possibility of introducing machinery to replace hand labor, it is not believed that there is any immediate opportunity for the sale of brickmaking machinery. Conditions during the last few years have made it difficult for factories with modern equipment prepared to operate continuously to realize a suitable return on their investment, and it does not appear likely that until these factories operate on a profitable basis other ventures of the same kind will be launched. As respects firms and individuals making bricks by hand, the same holds true, and in addition it must be borne in mind that few of them possess sufficient capital to make investments of any importance in equipment.

However, when building becomes active and the demand for bricks is large, it seems probable that a market may be found for brickmaking machinery. Persons well informed anticipate a rapid revival of construction work after a return to normal conditions.

Just what opportunities this may mean for American manufacturers and how these opportunities can best be taken advantage of, it is difficult to say. The best equipped factory at Montevideo purchased its machinery in Germany directly from the manufacturer—a member of the firm having been in Europe at the time. The factories at Salto and Paysandu also secured their equipment directly from the American manufacturers. It seems probable that most brickmaking machinery installed here will be purchased in the same manner. On account of the very limited demand, such equipment is not carried in stock by local machinery houses. For the same reason and because of the sporadic nature of purchases, the consulate would hesitate to advise American manufacturers to send out personal representatives.

Perhaps the most satisfactory way of securing a share of whatever market might develop would be to place an agency with a house at Buenos Aires, which could at the same time undertake to cover the Uruguayan field. Proximity and similarity of conditions make this feasible. The Argentine market is naturally much more important and, if conditions there seemed to warrant sending out a representative to look over the field and place an agency, he should certainly include Uruguay in his trip.

INDUSTRY AND THE GOVERNMENT.

We are at last coming to a full realization that in the main industry must be adjusted to the government and its needs instead of having government affairs adjusted to industry. It is a trying time, a time in which the welfare of the individual, or of any industry, must take a secondary place to the welfare of the country as a whole, a time in which it is the plain duty of business to help, not hinder. The time will pass eventually, bringing us again to that condition of affairs where the government may and should assist business. The degree of assistance then that any industry may be entitled to from the government will depend in some measure on the spirit and manner in which that industry has come to the aid of the government in its war needs.

If we didn't have a few disappointments now and then as a check to ambition, our ambitions would soon get to exceeding the speed limit.

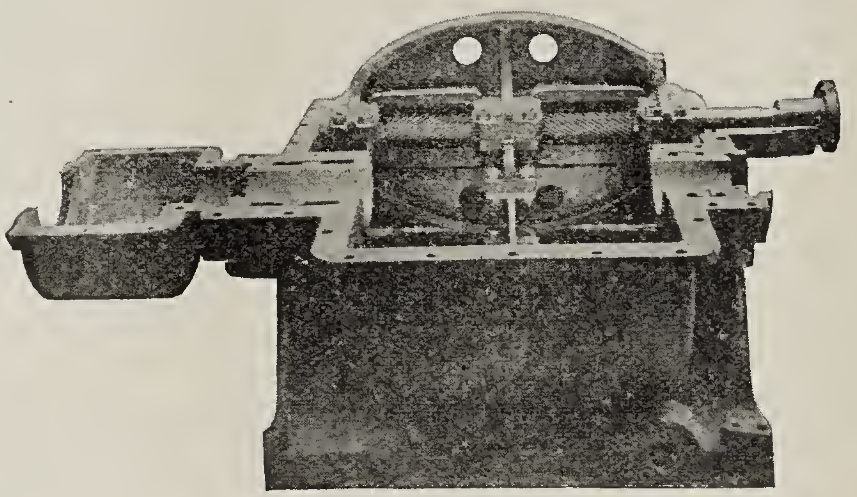
ADDITIONAL POWER FROM LINESHAFT BY TURBINE.

ELECTRIC MOTOR drive, the simplest solution to additional power supply problems, is oftentimes not available to mill owners, whose plants are driven by lineshafts. Often, however, there is sufficient boiler capacity in his plant to do the work, if it is effectively applied, particularly where lineshaft drive to a small number of machines is used. The installation of a turbine with speed-reducing gears is an ingenious solution to the problems.

A unique lineshaft drive, consisting of a Westinghouse low-pressure turbine and a Westinghouse daubee reduction gear, has been installed in a western Pennsylvania paper mill. There are two main lineshafts to which the machines are belted. To one of the lineshafts are belted two cutters, ten beaters and one Jordan, an identical equipment, with the exception of the cutters, is belted to the other shaft.

Only seven of the ten beaters, under ordinary running condition, are in operation at one time, and these with one Jordan, require about 600 horsepower. An additional 20 horsepower for the rag cutters.

Heretofore, these two lineshafts were each driven by a non-condensing reciprocating engine. However, one of these engines was wrecked and so necessitated the obtaining of a drive to replace it, at the least ultimate expense.

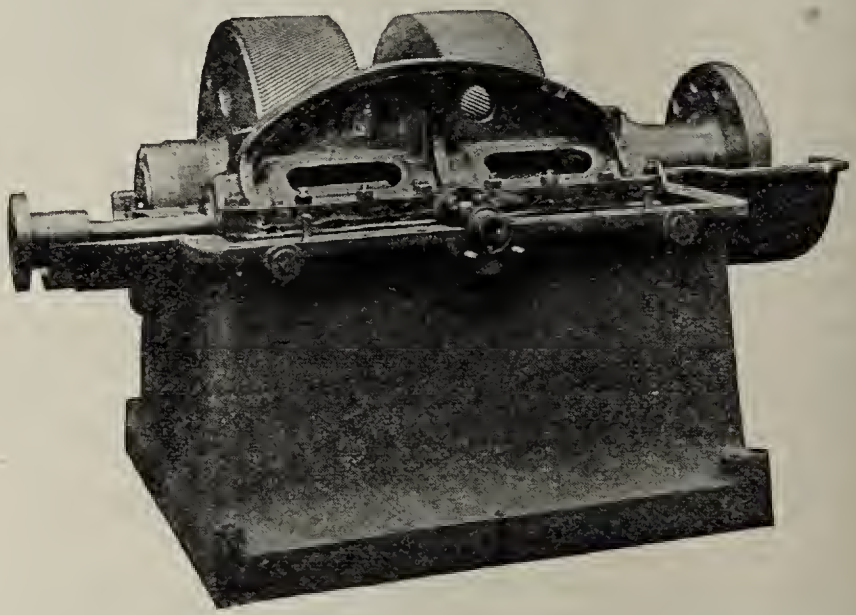


Flexible Frame Gear with Cover Removed.

It is interesting to note the considerations entering into the final selection of the new drive. These conditions were somewhat as follows: Two 100-horsepower non-condensing engines turned the rolls and gave practically all the exhaust steam necessary for feed water heating, so that all the exhaust steam from the 700-horsepower non-condensing Corliss engine, driving one of the lineshafts, would have to be discharged to the atmosphere, unless some means were provided for abstracting the energy still available in it. A low-pressure turbine was the prime mover, without a doubt, but it would have been of little use, on account of its high speed, had there not been a reduction gear to receive the power generated and to deliver it to the lineshaft at low speed.

Other types of drive were considered, but each had inherent characteristics which disqualified it. For instance, a duplication of the old reciprocating engine was stepping back into the old rut, with the inevitable wasting of exhaust steam. A condensing engine would have been expensive, and no material improvement. Again, an electric motor, while comparatively cheap to install, would have been much more expensive, when the electric power bill was added to the cost of energy lost in wasted exhaust steam. And finally, it was still more expensive to install a turbine generator and an individual electric drive, because the existing equipment was of an entirely different character. However, in a new plant, where all equipment is being installed for the first time, the individual electric drive is by far the best, for reasons too well known to need discussion here.

A few approximate figures show more clearly the fitness of low-pressure turbine for this application. The exhaust steam from the 700-horsepower Corliss engine was more than sufficient to give 600-horsepower in the low-pressure turbine. The engine takes steam at 150 pounds pressure, and exhausts into an oil separator at a back pressure, depending on the load, from 0 to 4 or 6 pounds, which is approximately the pressure of admission to the low-pressure turbine. The steam is then expanded in the turbine down to a vacuum corresponding to 27½ inches of mercury referred to a 30-inch barometer, the vacuum being maintained by a Westinghouse-Le Blanc low-level jet condenser and air pump. The pumps are centrifugal and are driven by a small turbine through a reduction gear. They take their water from a nearby creek and discharge it from the condenser into a reservoir at an elevation of 45 feet, which water is used in the manufacturing processes. The small turbine runs non-condensing, and its exhaust steam goes to the feed water heater, so that only a part of the heat energy in the steam used by it can be charged to the turbine, and even that cannot be charged against the main turbine, for it is used to do work in elevating the discharge water from the condenser to the reservoir and should be charged against the total cost of manufacturing. In brief, it may be said that this paper company actually gets 600 horsepower without paying a cent for steam, and that it is using just one-half the steam formerly used with two reciprocating engines, to obtain the same power.



The Three Pinion Bearings are Supported by a Frame which in Turn is Carried on Two Supports of I Section.

While this particular mill was not enlarged, it is evident that with a given amount of exhaust steam, either from non-condensing engines or condensing engines run non-condensing, a large increase of power is made available by the installation of a low-pressure turbine. Further evidence of this possibility for expansion is the fact that in this paper mill the two lineshafts were driven by non-condensing reciprocating engines, a battery of thirteen boilers was required, whereas now only eight boilers are required for the maximum load.

So far this has been a discussion of the application of a low-pressure turbine, but the means of transmitting its high-speed power to a slow-speed lineshaft is fully interesting and as important. The change in speed is made by means of two reduction gears, because the first cost of a single gear and pinion of ratio 36 to 11 would be prohibitive, and the gear would be very large and unwieldy. The first speed reduction, 3,600 r.p.m., to 720 r.p.m., is made with a fixed bearing type of reduction gear, the gearshaft of which is direct connected to the pinion-shaft of the second gear, which reduces the speed from 720 to 103 r.p.m.

This larger reduction gear is of the flexible pinion frame type, better known as the Westinghouse I-beam type. It is this I-beam feature which makes the application of the geared drive possible.

In this, the pinion is supported on three bearings in a frame, as per illustration. The frame is supported under the middle bearing on an I-beam at right angles to the pinion axle. The flexibility of the web of this I-beam support allows the pinion to tip slightly and to let the teeth of the pinion line up with those of the gear. This lining-up is entirely automatic and instantaneous in operation, so that no mechanical complications are encountered, and no adjustments from the outside of the gear case are necessary at any time.

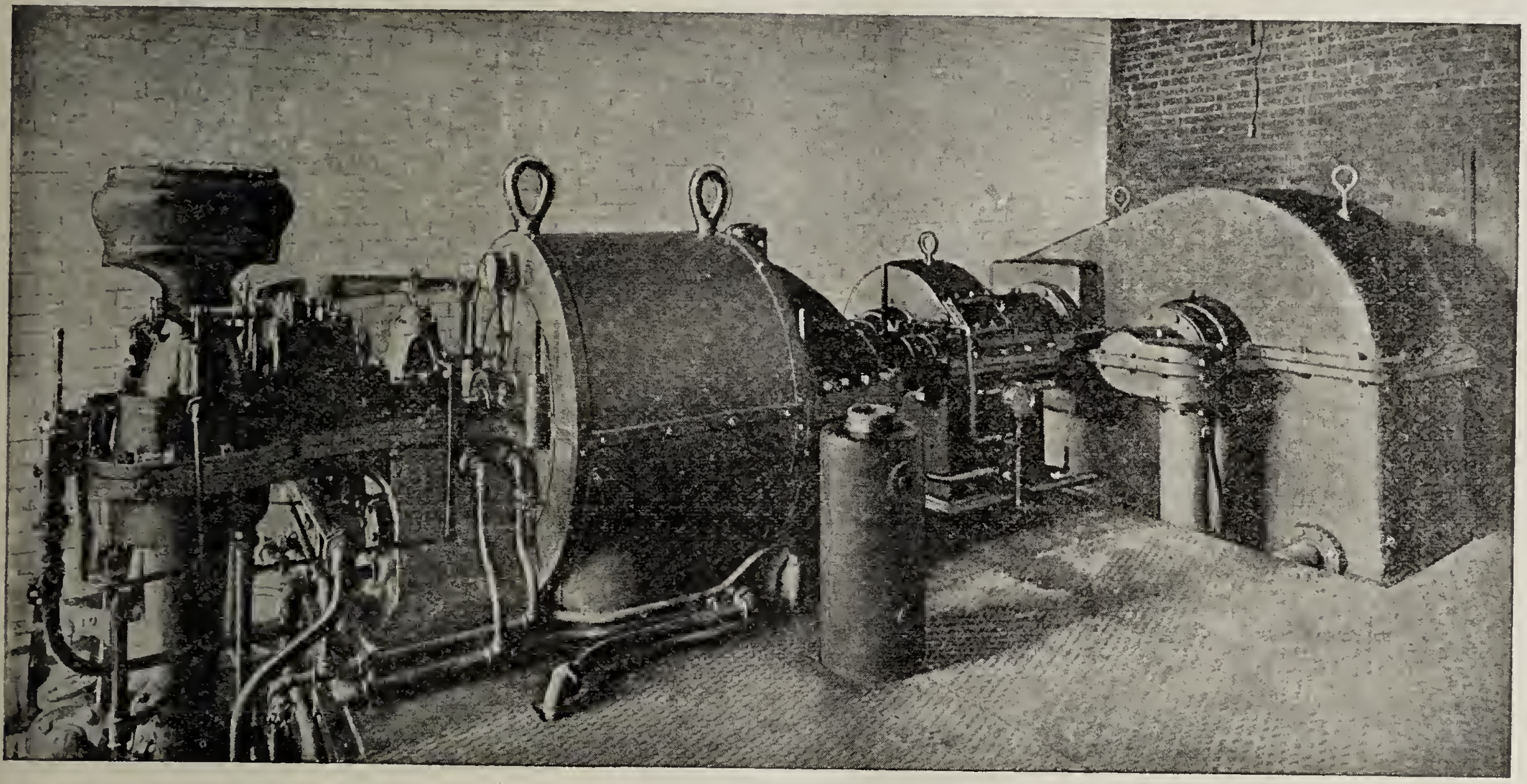
Both reduction gears are lubricated by sprays of oil directed upon the teeth just before the mesh. The pressure is maintained by a pump geared to the gearshaft, as shown in cut. This pump also supplies oil under pressure to all the bearings in the two reduction gears. For starting, a hand pump is provided which insures a plentiful supply of oil on the bearings and teeth.

It may be asked why a fixed bearing type of reduction gear was used in one case and an I-beam in the other. It was a question of tooth pressure which determined the design. Take for instance a pinion transmitting 600 horsepower at 3,600 r.p.m., which was the case of the first reduction gear in the particular installation under discussion. If the same pinion were to turn at 720 r.p.m. and with the same tooth pressure (i. e., pounds pressure per inch) of tooth face, it would be capable of transmitting one-fifth of 600 horsepower, or 120 horsepower only. It follows, then, that the second gear would have been made five times as large as the first if the same type had been used, and for the transmission of the same amount of power. Such reduction gear would have been large and bulky. It would also have been costly, because cost is a function of size.

In order, then, to make a reduction gear which would be within reasonable limits as to size, and at the same time marketable, the allowable tooth pressure had to be increased; or, in other words, the factor of safety included in the allowable stress in ordering fixed bearing design had to be lowered. But if this were done, some other safety factor would have to be incorporated to insure reliability of operation, otherwise a slight misalignment of the teeth and uneven distribution of tooth pressure would have resulted in a failure of the gear.

This safety factor was found in the Westinghouse I-beam support for the pinion which corrects any misalignment and uneven pressure distribution which might otherwise exist. Misalignment might have been due to temperature changes, slight but unavoidable inaccuracies in workmanship, or distortion of the bearing supports in the housing, due to varying loads or changes in foundations, and if not corrected would have caused the total tooth pressure to be concentrated at one part of the tooth, which would have overstressed that part of the tooth and have caused it to fail.

In the case of the reduction gear with fixed bearing support for the pinion, misalignment, although practically prevented by good workmanship, will not have disastrous results if it should exist, because of the high factor of safety used in the tooth design. In other words, localization of total tooth pressure would not stress the metal beyond a safe limit.



View of Turbine (Left) and Two Reduction Gearing (Right).

The self-aligning feature, the forced lubrication, the rugged construction of the parts, and the workmanship on these reduction gears make them a very efficient and reliable means of transmitting power. The actual efficiency of the two gears together is 97 per cent., showing that only 3 per cent. of the total power transmitted is lost in them. This energy is dissipated in the form of heat and is taken up by the oil, which in turn is cooled by a water cooling system. As to reliability in the paper mill under discussion, the double reduction gear has run twenty-four hours per day, six days per week, under maximum load, and it has never been shut down on account of trouble with the gears.

In conclusion, we might review the chief points brought out in this article. The fundamental one is efficiency of Westinghouse I-beam reduction gears as applied to lineshaft drives; the possibilities for expansion of existing plants by the use of exhaust steam in low-pressure turbines is another; and, finally, the remarkably low operating cost obtained through this application.

WHAT A SOLDIER COSTS.

Figures have been compiled showing just what it costs Uncle Sam a year for each soldier in the army. The estimate shows a total cost per man of $2,040 a year, divided as follows:

Sustenance	$ 430
Personal equipment	280
Service Equipment	650
Pay (average, officers and men)	480
Housing, Cantonments, etc.	80
Transportation (to France)	120
	$2,040

When we count men by the million, as we do now, and then add to all this the cost of food, fuel and other special administration because of the war, it mounts up into stupendous sums and makes it easy to understand why we must buy bonds and pay extra taxes, for it is the business of those of us who stay at home to pay the bills while the soldiers do the fighting to make the world again the right kind of a place to live in. So get in on that next Liberty Bond issue and do your part.

AMERICAN CERAMIC SOCIETY TO HOLD MEETING DURING CHEMICAL INDUSTRIES SHOW.

To the Members:

There will be a meeting of the American Ceramic Society on Thursday afternoon, September 26, at the Fourth National Exposition of Chemical Industries, Grand Central Palace, New York City. Time 2 p. m.

This meeting will be of special interest to all ceramic men in view of the fact that the American Ceramic Society will have an exhibit there along with all other branches of the chemical industries.

Afternoon Program.

Recent Developments in the Ceramic Industries	A. V. Bleininger
Manufacture of Electrical Porcelain (with moving pictures)	L. E. Barringer
American Clays	H. Ries
The Ceramic Society and the Journal	C. F. Binns
Manufacture of Stoneware (illustrated with lantern)	F. A. Whitaker
Sands That Serve	Moving Picture Depicting the Manufacture of Glass
Fuel Conservation	J. B. Shaw
Carborundum Refractories	S. C. Linbarger

Evening Program.

Beginning at 8 p. m., consists of the following:

1. Service of All Ages.
2. Title Later.
3. Title Later.
4. Sands that Serve.
5. The Potter's Wheel.
6. Title Later.

The sand, gravel and cement people seem to be several jumps ahead of the brick people in the use of motor trucks, and they are profiting by it. It looks like the brick folks might hustle things along a little in connection with the truck idea.

PROPER DRAINAGE MEANS MUCH TO A ROAD.

Taking all things into account, water is the worst natural enemy of cross country travel, whether by road or railroads. More traffic trouble has been caused and more roadway maintenance expense incurred from inadequate provision for drainage than any other natural element. Railroads have been forced from sad experiences to pay attention to this important subject and to enlarge their drainage facilities, but country roads and highways have not always been located or constructed with a view to minimizing water difficulties.

It is not at all uncommon to see a hard surfaced road get softened from underneath by the action of water and rapidly cut to pieces by the wheels of traffic. At certain times of the year most of the earth roads are impassable to automobiles, and almost so to horse-drawn vehicles. Water-bound macadam when soaked full of water is easily cut into ruts by heavy loads on narrow tires, and no type of the most expensive road built will withstand the weight of heavy loads when the subgrade foundation becomes softened by water. The action of freezing weather on a water saturated road causes heaving, raveling, spawling and a rapid deterioration and disintegration of the surface. Proper attention given to drainage during the location and construction of a road means its success, long life and low maintenance charges. Poor drainage means absolute failure and a waste of time and money.

An earth road is the hardest to keep in shape on account of the ease with which the surface absorbs water, hence the crown must be steep enough to shunt the water to the sides where there should be ditches of ample size and capacity to carry the water rapidly into the natural drainage channels of the country through which the road runs. The crown necessary varies somewhat with the kind of material encountered, but for general conditions the usual crown is one inch per foot. On a heavy grade, the amount of crown should be more than on the level or a medium grade. This is necessary in order to have the water run to the sides of the road instead of down the center. For an 8% grade a crown of 1¼ inches per foot is probably better and for a 12% grade 1½ inches per foot. Care should be taken not to allow an excessive crown for it is dangerous, traffic being more liable to skid when the surface is at all slippery. A rational use of the road drag will fill up holes and ruts keeping the crown smoothed, thus preventing the collection of water on the surface and the ultimate destruction of the road.

The side ditches should be of ample size to carry off all surface flood water, deep enough to drain well below the subgrade keeping it dry, and have a sufficient fall to allow the water to run away into the natural water courses instead of remaining half full and forming a source of supply for the saturation of the road subgrade. There is one exception to this latter statement. In the irrigated districts of the west where there is insufficient rainfall to keep the road surface drying too much thus losing its moisture and causing it to pulverize into dust, the blocking of the side ditches and running them apart full of irrigation water is advisable. This helps to maintain sufficient moisture in the subgrade which by capillary action aids in keeping up the percentage of what may be called necessary "binder moisture."

In through cuts a road should have two side ditches and an extra ditch on the hillsides above the slope of the cut to catch surplus water and wash before it gets into the road. Sidehill cuts need the upper hillside ditch and a roadside ditch at the inner side of the cut, the road surface slope being in only one direction, towards the inside. Frequent culverts are desirable to carry the water under and away from the road, the side ditch being blocked when necessary to force the water into the culvert.

Generally, road ditches are made too shallow and a small amount of debris in them will check the flow of water during a rain, causing flooding and erosion of the surface. The ditches should always be kept clean.

They are usually made by plows and road machines, and deepened where desired by the use of a drag scraper. Where material is hard the use of low grade dynamite will be found of benefit in loosening it for the machine. In soft wet clay or muck, ditches are difficult to dig on account of the stickiness of the material, but by blasting the ditches through ahead of the grading work the road will be drained and dry enough for the machines to work. Hand digging is much too slow and expensive to be used in any kind of road work.

Some deep clays are too fine and retentive of water to be much affected by shallow side ditches and it is necessary to place blind drains at a considerable depth below the surface to carry off the water. These under drains should follow the line of a side ditch and have frequent branches across the road, thus draining the surplus water from under the subgrade. The main drain is frequently laid under the center line of the road, but this requires digging up the road surface for a considerable distance when repairs to the drain are necessary which should be avoided when possible. These drains should never be less than 2½ feet deep, and may be of loose rock piled into trenches or for a more permanent installation drain tile laid on proper grades.

In some instances, where the surface soil is underlaid by an impervious stratum of clay or hardpan which prevents drainage by holding water above it, relief can be obtained by blasting and shattering this stratum thus permitting the percolation of the surface water downward. This method is of great benefit where roads cross enclosed depressions having no outlet for the draining of surface water. To be entirely successful, however, there must be a pervious stratum of soil, preferably sand or gravel underneath the hardpan for the absorption of the water.

Earth roads properly located and drained are safer, much easier of maintenance, and easier on travel. As they nearly always eventually form the base for improved roads, care and attention paid to drainage will save much expense and trouble later when the hard surfacing is laid.

IN FLANDERS FIELDS.

(From "In the Day of Battle," by C. E. Holman, published by William Briggs, Toronto, Canada.)

In Flanders fields the poppies grow
Between the crosses, row on row,
  That mark our place, and in the sky
  The larks, still bravely singing, fly,
Scarce heard amid the guns below.

We are the dead; short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved; and now we lie
    In Flanders fields.

Take up our quarrel with the foe!
To you from failing hands we throw
  The torch; be yours to hold it high!
  If ye break faith with us who die
We shall not sleep, though poppies grow
    In Flanders fields.
      —Lieut. Col. John McCrae.
(By permission of G. P. Putnam's Sons.)

THE WAR SERVICE WORK.

There has been a disposition all around to steer clear of wide publicity in connection with the war service work on the part of the brick trade. This was at the request of authorities at Washington, given and taken in good spirit and faith, and there is no question but what sensational publicity should be avoided. But there are now indications that the good work itself may suffer from lack of enough publicity to make the matter better understood by the trade. Committees are having personally to bear expenses of work that should be divided up among the trade as a whole, while there are many in the trade who would gladly come forward with their share of expense if they knew better just what is wanted and what is being done. A little more of the right kind of publicity properly handled should prove helpful rather than hurtful in this work.

A COURTESY ORDER.

What is perhaps the most important and far-reaching courtesy order ever issued in this country is officially known as General Order No. 40, recently issued by Director General McAdoo, of the railroads, instructing the railway employes to extend courteous treatment to all patrons of the railroads, whether they be shippers or passengers. The order is couched in no uncertain terms, and bears pretty conclusive evidence that he means business. It is an order that furnishes the public a great measure of satisfaction, too, for there was an evident tendency on the part of many railway men, from porters to presidents and traffic managers, to be snippy and arbitrary with the public, and to pass the buck on to government officials. We know that courtesy pays in business, and we will pretty well all agree that when necessary it should be enforced in government matters.

THE WASHINGTON REPRESENTATIVE OF BUILDING INTERESTS.

In acordance with the views of the Executive Board, it has been arranged with Mr. W. A. King of Washington for him to act as resident representative of the National Federation of Building Industries for the next two months.

Mr. King is very well known in building circles, being connected with the National Association of Builders' Exchanges as their general counsel, and in his law practice he is recognized an authority on many special features relating to building construction work in general.

Mr. King has entered upon the task of his duties and already has on his hands several impotrant matters, the outcome of which will develop from time to time.

MADE IN THE UNITED STATES.

We are pleased to note that Mr. Charles Englehard, a manufacturer of pyrometers and other electrical apparatus, can now label all his products "Made in the United States." He manufactures complete the Engelhard le Chatelier pyrometers, which formerly have been known to the trade as the "Heraeus" Le Chatelier Pyrometer," which is illustrated on page 283, and which is peculiarly adapted to the needs of brick, tile and pottery manufacturers. Illustrated booklet can be had for the asking. Address Charles Engelhard, 30 Church St., New York.

New Zealand Firm Wants to Communicate With Manufacturers of Stoneware and Pottery.

Editor The Clay-Worker:

We are at the present time making a line of salt glazed, fire clay, terra cotta and heavy glazed ware and would like to get in touch with firms in the United States making the finer pottery wares, stoneware and fire clay goods, as we want to add same to our line for this market. If you can put us in communication with such firms, will appreciate the favor.

LAMBERT BROS.

Kensington, Dunedin, New Zealand.

CORRESPOND-ENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

GOOD PLACE FOR PYROMETERS.

Editor The Clay-Worker:

We are having considerable trouble with our night burners, who allow the kilns to stand still, which we believe is due to their soldiering on the job or going to sleep.

Do you know of any device that might be used whereby we would have a complete check on this sort of annoyance and loss? If so, will you kindly give the name and addresses of the manufacturers of a device that might give us relief?

Thanking you in advance for the information asked for, we are,
Yours very respectfully,
WINDBER CLAY MFG. CO.

August 17, 1918.

NEW YORK BRICK MAN GOES TO FRANCE WITH CONSTRUCTION DIVISION.

Dear Friend Randall:

Received your letter yesterday, and was glad to hear from you. The war has put us out of the brick business entirely; in fact, there is no brick business going on here at the present time to amount to much.

You will be glad and pleased, I know, to hear that I am going to France to lend a hand where hard workers are most needed. I am elected to go in the construction division of the Y. M. C. A. and they tell me it is the biggest job I ever tackled. That pleases me, I can assure you. I will drop you a line when I get over there, if I can find time to do so. I trust after the war is over and the Huns have been beaten to their knees, I can return and get into the brick dust again, and meet you all at convention.

Please send me a bill for the Clay-Worker and also let me know if you can mail it to me in France.

Yours very truly,
CHRISTOPHER STEADMAN.

WANTS MACHINERY FOR MAKING ADOBE BRICK.

Editor The Clay-Worker:

I am interested in the manufacture of bricks, because I own a large tract of ground containing clay of the best quality.

I prefer said machinery very plain and handy, because I desire to invest only a small amount of money in the installation of same at first; furthermore, it is my intention to manufacture blocks of 10x5x2½, more or less, and put them on sale dry, but not baked, because the fire and motor power would today be very costly for me. I would like prices on machinery f. o. b. New York for making this class of brick and an estimate of the net weight and gross weight, cubic measurements, weight and measurement of the piece most indivisible and productive capacity for ten hours of work and number of laborers necessary for that same production, also terms of sale, etc.
Very truly yours,
ANTONIO J. ALVAREZ, C.
Maracaibo 64, Medellin, Columbia, South America.

BRICK MANUFACTURERS ENTITLED TO A FAIR RETURN FOR MONEY INVESTED.

Editor The Clay-Worker:

There has been quite a good deal of talk lately about what a brick manufacturer might consider a reasonable profit over and above his costs, and perhaps it would be well to discuss same a little in The Clay-Worker.

Contrary to the opinion of the uninitiated, money invested in a brick plant, is a risky venture. Here is a case that came under my notice. A certain brickmaker, experienced and an expert, builds up a good business from a small beginning. His hard earned savings are invested in enlarging and improving his plant. His success attracts the notice of some of his fellow townsmen. One of them happens to own a bed of clay on his farm. The clay has the appearance of the clay used by the brick-maker. The owner of the farm sees where he can turn his clay into a money bank. He talks it up. A stock company is formed. Bricks are made. The product is away below standard in quality. In order to get rid of the stuff they are put on the market at a price below actual cost. Common brick can be shipped only inside of a restricted territory. Only a certain number of brick are used annually in that territory. The sure enough brick-maker has to cut his price in order to sell part of capacity of his plant. That condition goes on for two years when the new company goes into the hands of a receiver. A new company is formed. They have discovered a man who assures them that he can make good brick out of their clay. Money is spent in altering the dryer, etc., etc. The stuff the new company makes is, if anything, worse. Prices are cut to below cost. The new company lasts perhaps two years. In the meantime the sure enough brick-maker "Got it in the neck." This is no fanciful picture. It's a reality.

Even with an up-to-date plant, managed economically, there is always a risk. Faults in the clay bed are not uncommon, causing a change of method and of machinery and perhaps kilns. All of which takes real cash in big bunches.

On top of all that there is the certainty of additions every year to the cost of transporting clay as the distance increases. Twenty-five years for a business to last without change is considered quite a long time. A costly plant with a worked out clay bed is as useless as a ship's anchor in the Desert of Sahara.

A yearly profit (so-called) of twenty-five per cent is, I think, reasonable under the circumstances we have to contend with.

Do you know any brick manufacturer who accumulated a fortune? I mean a fortune in real money?

Yours truly,
Milledgeville, Ga. J. W. McMILLAN.

INFORMATION WANTED RELATIVE TO CHIMNEYS.

Editor The Clay-Worker:

Can you give us any data, or information, as to the desirability of a reinforced concrete chimney for use in connection with fire brick kilns? Or, in other words, which is the better, a reinforced concrete chimney or a brick chimney for this purpose?

If possible, we would like to have a reply by mail at your very earliest convenience.

Yours truly,
A FIRE BRICK MANUFACTURER.

Concrete Not Adapted to Chimney Construction.

Editor of The Clay-Worker:

From the day concrete made its advent in building construction, its merits were fully recognized. It must be admitted that for a large number of structures, there is actually no better material than concrete. It became evident very soon, however, that it is an entirely unsuitable material for any purposes where it is subject to the attack of heat, products of combustion, or undiluted acids. One of the best known structures in which such conditions prevail, is the chimney. Numerous failures must be recorded here.

For the moment, we do not want to discuss those where the structure collapsed during construction or soon after. We refer for the present, only to those which decayed rapidly very soon after being put in operation. The thin walls of a stack permitted a very rapid radiation of the heat. Condensation took place on the inner side of the stack, and the condensate worked its way into the fissures, rapidly destroying the texture of the material, and attacking the reinforcing steel. The stacks started to lean, to burst open, or collapsed entirely. Recently this inherent defect has been in part overcome by using a lining of burned clay, extending the full height of the stack. This, of course, adds materially to the cost of the chimney. It will be found that there is little difference in the cost of a well constructed concrete stack, with a lining extending the full height, against the cost of a radial brick chimney.

In the beginning, concrete chimneys were built mostly in territories where only inferior brick material could be had and the cost of transportation was prohibitive. In other words, they were bought in localities where the price difference was considerable. People engaged in the business, of course tried to extend the market, and offered their construction in territories which might be called "brick territories." In order to compete with brick chimneys, the price on a concrete stack had to be materially lowered, and the desire to cheapen the structure, lead to designs which collapsed even during construction. To fully understand the reasons why this should happen, it is necessary to refer briefly to the way a concrete stack is built. The cost of forms is considerable, and so are transportation expenses, and it is desirable to use, wherever possible, only one set of forms, and remove these as quickly as possible, to be used in the next section above. This has lead to the use of a quick-setting and comparatively dry mixture, giving a very porous concrete, which readily admits the condensates mentioned before, and quickening the process of destruction. It must be admitted that a fairly satisfactory structure could be built, if the concrete would be poured wet, resulting in a dense, slow setting material, but in this case the cost of the concrete stack would be equal or higher than the cost of a radial brick chimney.

Very truly yours,

FRANK H. WALBLIES.

SUGGESTIONS FOR THE UTILIZATION OF BRICK DRYERS FOR FOOD CONSERVATION.

My dear Mr. Randall:

On account of the relation of normal building construction to the conduct of a tremendous all-engrossing national undertaking such as our part in the present world war has turned out to be, practically all activities catering exclusively to this industry have been brought face to face with the most serious and vital conditions.

Some of these activities have fortunately been in a position to be able to turn to the production of some product or service essential to the conduct of the war. The brick industry, however, is of such a nature that its factories do not lend themselves easily to the production of anything except the brick they were designed to produce. A suggestion offering possibilities of conversion without involving changes of extreme complicity or great expense may therefore be of interest.

One of the great problems which confronts this nation is its duty to feed a large part of the world during the war and in all probability for some time afterward. Since the United States is not, in the main, an "all-year-round producer" of foodstuffs, the problem of food preservation has claimed considerable attention on the part of government authorities. A process which, until recently, failed to gain prominence, is that of dehydration of certain foodstuffs; notably fruits and vegetables. Especially designed plants have been erected and are in contemplation for this purpose.

Mr. Fritz Koch, president Twin City Brick Co., of St. Paul, was, I believe, the first to conceive the idea of using the drying facilities of brick plants for dehydrating purposes. Successful experiments were conducted on a small scale and brought to the attention of certain governmental authorities who need not be mentioned at the present writing. It is sufficient to say that these authorities were interested in the project to such an extent that further experiments will probably be conducted as soon as the Agricultural bill is passed by Congress, and funds are made available.

It would seem that as most of the drying apparatus to be found in a modern brick plant lends itself to careful regulation of temperatures and air currents, and the almost universal employment of drier cars will permit of easy handling of foodstuffs on trays, the difficulties to be overcome will not be found insurmountable. Many plants dry their brick by the use of waste kiln heat and the tunnel connections so employed can be utilized to obtain pure hot air for food drying by using one or more kilns on the principle of "hot stoves" as carried out in connection with glass furnaces and smelters.

Trusting that the above will be of at least passing interest to some of your readers, I am,

Very truly yours,

WILLIAM C. KOCH.

PERCENTAGE OF FUEL REQUIRED IN BURNING BRICK AND HOLLOW TILE.

Editor The Clay-Worker:

Will you please state the average fuel consumption per thousand brick and also per ton of tile of each of the different types of kilns? It would also be interesting to know the average amount of fuel consumed in manufacturing in addition to the burning of the ware.

Thanking you in anticipation of same, C. R. C.

A Kiln Man's Estimates.

Editor The Clay-Worker:

In response to the above query will say that I have a lot of data on brick burning, but find that the variation is very considerable in the different sections of the country, owing to the differences in clays and the variation in fuel values. The following estimates is an average of fifty-seven different plants, "fifty-seven varieties," as it were.

The fuel consumption in burning brick is approximately as follows:

Common brick, 480 pounds of coal per thousand brick in a continuous kiln; 1,200 pounds of coal per thousand brick in down-draft kiln; 1,400 pounds of coal in up-draft kiln.

The figures for hollow tile are as follows:

Two hundred to three hundred pounds of coal per ton of hollow ware in continuous kiln; 500 to 700 pounds of coal per ton of hollow ware in down-draft kiln. Very little hollow ware is burned in up-draft kilns, so I am unable to give figures in that connection.

It is not so easy to estimate the amount of fuel consumed in the manufacture of brick and tile in addition to that required in the burning process, but it is my judgment that ordinarily about 1,000 pounds of coal is the average consumption in brick plants and 550 pounds of coal in hollow ware plants. Of course there is a wide variation owing to the character of machinery used and the condition of the machinery. Naturally a well-cared-for plant can be operated with less power, which means less fuel, than a poorly-cared-for and poorly-equipped plant.

Very respectfully,

A KILN EXPERT.

OBITUARY.

A Well Known New England Brick Manufacturer Answers the Final Summons.

William A. Bailey, a well known New England brick manufacturer, and prominent for many years in the industrial and civic affairs of Northampton, Mass., died August 26, at his home after an illness of several months. Mr. Bailey was born in Massachusetts in 1849, and early in life learned the trade of brick mason and later on under the firm name of Brown & Bailey carried on brick contracting as well as brick manufacturing. The firm was dissolved on the death of Mr. Brown; and together with his son-in-law, Charles L. Sautter, Mr. Bailey has carried on an extensive business, both in manufacturing brick and contracting. Most of the large and important structures in that section are the work of this firm. Mr. Bailey was a staunch Republican and had served his city, county and state in various capacities, having been chief of the City Fire Department for seven years and a member of the State Legislature for two terms, and was a member of the State Board of Assessors at the time of his death.

Mr. Bailey was an old-time and active member of the National Brick Manufacturers' Association, and together with his wife, daughter and son-in-law had attended many conventions. He was always genial and courteous and will be sadly missed from the annual gatherings by his friends from all sections of the country. A wife and two daughters, Mrs. Charles L. Sauter and Mrs. Frederick Bennett, both of Northampton, survive.

The Late Wm. A. Bailey.

AN OPEN LETTER TO CLERKS.

When your customer was peevish today because she could not buy more sugar than two pounds per person per month, what did you say to her?

Did you shrug your shoulders and make some slighting remark about the Food Administration and the impossibility of understanding its regulations, or did you have the facts at your tongue's end?

It is important that you remember what you said, because upon your answer to her criticism may largely depend that woman's attitude toward the Food Administration, our own Government, and toward the war in general.

Suppose you had said to her that she was being asked to restrict her use of sugar because the ships which were formerly used to transport sugar to this country were now taking our soldiers to France in such numbers that they have definitely staggered the German line. Suppose you had explained to her that the allied countries of Europe have been holding that line for years on a lower sugar ration than we are now asked to observe, and that in the face of pitiful shortage of all other supplies. Suppose you had taken a few minutes to show her how soldiers need sugar for quick energy and how much greater our exports must be now that we have more than a million men over there to be fed, in addition to the 120,000,000 allies, all of whom look to us as the last food resource of the civilized world.

Women are sympathetic and loyal by nature. Any woman would give her last pound of sugar to her sister in France and she would deny herself anything to serve her country. This woman merely did not understand.

Clerks dealing with the public in these times should make it a question of personal honor to keep informed upon all questions connected with the war. War should be our business, first, last, and all the time. We should never "lose sight of the ball."

Our daily conservation in these times must be guarded. We are either aiding our Government or we are aiding the Germans. **Which side are you on?**

A WISE BUSINESS VIEW.

"THE GOVERNMENT has not ordered curtailment of advertising," writes Jesse H. Neal, executive secretary of the Associated Business Papers. "On the contrary, a high government official and an authority on the subject, Hon. W. B. Colver, chairman of the Federal Trade Commission, has gone on record as being opposed to the idea, as the following excerpts from a recent statement prove:"

"DISCONTINUANCE OR EVEN SHARP CURTAILMENT of advertising because of temporary war conditions, would seem to imperil the most valuable asset that any business has—namely, its good will. No more faulty logic can be found than that which would impel a manufacturer to cease building for the future by means of advertising, simply because the output of his factory is, for the time being, restricted; or because diversion of his facilities to war work has operated to withhold his goods from accustomed markets. In modern business there can be no sufficient-unto-the-day policy.

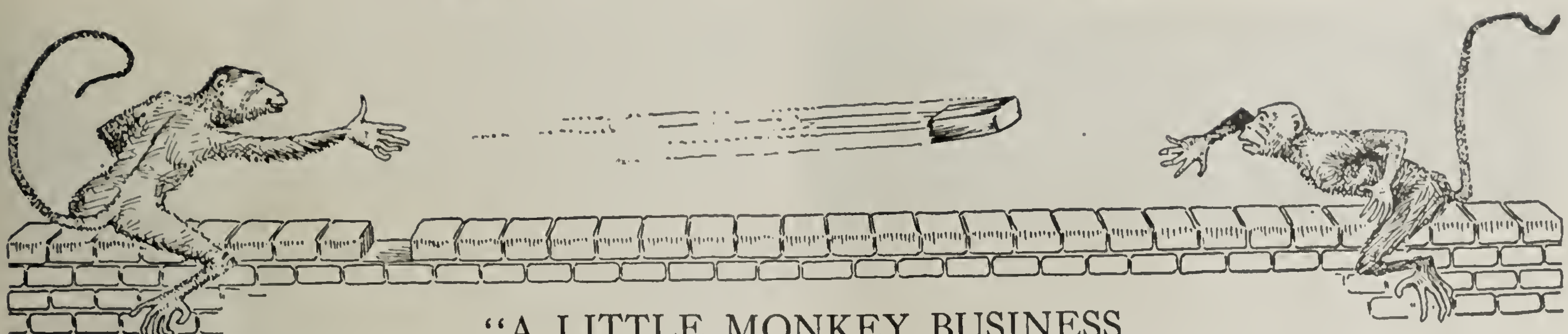
"In advertising the business man has built up the intangible or spiritual side of his business, if such it may be designated, as distinct from the material side. It is the spiritual side as represented by the good will that is slower of growth and that is the more seriously jeopardized by neglect—neglect which should take no more disastrous form than an interruption to advertising.

"Good-will, in my estimation, is far more valuable than the physical property with which it is linked. * * * *

"The manufacturer who has converted his factory to war work and has therefore interrupted the production of his original line, does not tear down and discard his expensive machinery to save the insurance premiums or other similar expenses. It would be just as sensible for a manufacturer whose commercial integrity is founded upon advertising to abandon his advertising campaign in order to save the carrying charge upon his greatest asset, good-will. * * * *

"They told me when I was a youngster that 'even the Lord can't make a two-year-old calf in a minute.' Big advertising spreads after the war will meet equally big spreads. Business will bid for public attention and interest on a bull market. The purpose will be to put a punch in good-will which has gone flabby. The man who goes into that contest with a public attention and interest which he has never allowed to relax will go in with his good-will trained to the minute.

"HE WILL WIN."



"A LITTLE MONKEY BUSINESS NOW AND THEN IS RELISHED BY THE BEST OF MEN."

A Definition.

The Answers to Correspondents editor was deeply engrossed in his arduous duties.

"Here's a guy who wants to know what musical instrument produces foot notes," he called out to the sporting editor.

"Tell him a shoe horn."

* * *

The Soft Answer.

"I got tired asking the boss of my department for a raise, so this morning I went right up to the superintendent and struck him for it; told him I had grown gray in his service."

"What did he say?"

"He said if I had worked anywhere else I would probably have grown bald."

* * *

His Only Plaint.

Tim Malloy, a Texas farmer, applied for naturalization papers. The judge asked him: "Are you satisfied with the general conditions of the country?"

"Y-yis," hesitated Tim.

"Does the government suit you?"

"Y-yis, yis, only, bedad, I'd like ter see more rain."

* * *

Betrayed.

The other night
I went to the theater
With a low-brow friend
And the orchestra played
"The Little Brown Jug."
And he thought
It was the national anthem
And stood up,
And I did, too,
Darn him.

—Arkansas Gazette.

* * *

Discretion.

Orderly Officer: "Why don't you challenge me?"

Latest Called-up Recruit: "I didn't know you were coming."

Orderly Officer: "What did the corporal say when he posted you?"

Recruit: "I wouldn't like to repeat it to an officer, sir."—Punch.

* * *

Checkmated.

"I want a checked vest."

"How long do you want it?"

"Until it wears out."—Record.

* * *

Not Effective.

"Now," said the doctor to the young married man, "if you will take this medicine you will sleep like a baby."

The patient surveyed the prescription doubtfully.

"Well, doctor," he answered, "if you mean like our baby, I guess I won't take it."—New York American.

* * *

Bonehead.

"G'wan, nigger, you-all ain't got no sense nohow."

"Ain't got no sense? Whut's dis yere haid for?"

"Dat thing? Dat ain't no haid, nigger; dat's jes er button on top er yo body ter keep yer backbone from unravelin'."—The Lamb.

* * *

No Novelty.

"If you go first, dear, you'll wait for me on the other shore, won't you?" questioned the fond wife.

"I suppose so," returned her husband, with a sigh. "I never went anywhere yet without having to wait for you."

* * *

Misplaced Sympathy.

A Jersey man of a benevolent turn of mind encountered a small boy in his neighborhood, who gave evidence of having emerged but lately from a severe battle.

"I am sorry," said the man, "to see that you have a black eye, Sammy."

Whereupon Sammy retorted:

"You go home and be sorry for your own little boy—he's got two!"—Everybody's Magazine.

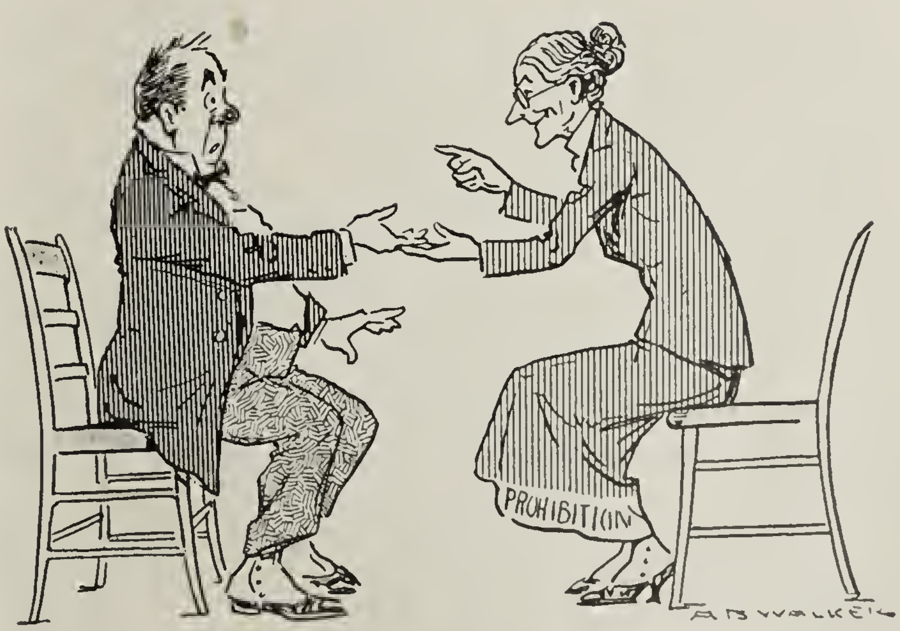
* * *

Furnishing a Substitute.

Bessie had a new dime to invest in ice cream soda.

"Why don't you give your dime to missions?" said the minister who was calling.

"I thought about that," said Bessie, "but I think I'll buy the ice cream and let the druggist give it to the missions."—Christian Herald.



THE PALMIST

"AND I ALSO SEE THAT YOU ARE GOING TO SIGN THE PLEDGE AND KEEP IT THIS TIME, TOO"

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXX. SEPTEMBER, 1918. No. 3.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

And now come the melancholy days—for the Hun.

* * *

That Sunday order against autos reads a little like a blue law.

* * *

We are all proud of our army, so now let the rest of us turn to and make the army proud of us.

* * *

There are two injunctions to keep in mind about Liberty bonds; one is to get them, and the other is to hold onto them.

* * *

It is a good time to keep those "Build With Brick" signs decorating those busy centers that are calling for extra housing.

* * *

Those tractors that are helping the farmers to grow more grain with less help will also make it easily practical to do more drain tile laying.

* * *

With the call to save coal, save food, save gasoline, save clothes, save shoes and to save for war stamps, the average individual must needs draw pretty heavily on the reserve stock of saving grace.

* * *

Eventually we are due for a great war of words over the question of government ownership of railroads.

* * *

It is in the taking up of man's work by woman that we have developed the real feminist movement in this country.

* * *

It is a good time to make a study of the possibilities of truck delivery over many hauls that have been considered railway hauls.

* * *

Rust is the arch enemy of idle machinery, and machinery comes high and is hard to get these days, so give your idle machinery a dose of oil.

* * *

While the building permits for the summer months look like about 30 cents on the dollar, there has been enough call to use up the brick supply.

* * *

The brick yard is a bit lonesome these days, and so is the family fireside, for that matter, all of which brings the realities of war close home to us.

* * *

From being a debtor nation of about five billion dollars in 1914 to a creditor nation of seven billion in 1918 is making pretty good financial progress.

* * *

That habit of our South American neighbors of plastering over the outside of brick walls calls loudly for an educational campaign on the natural beauty of face brick.

* * *

There is not much need to worry about enforcing peace after it is once established, for in bringing peace to the world Uncle Sam is building up a force that will hold it there for awhile.

* * *

When we consider the fact that a five-ton truck on a good highway here will carry as much freight as a railway car in Europe it is a pretty convincing argument in favor of keeping up the work of good roads building.

* * *

Those union labor representatives are over-sensitive folks when they interpose objection to drafting labor. If we draft men to fight for but little money, why should we stickle at drafting them to work at the best wages ever paid?

* * *

Somehow a study of the Federal Trade Commission report of its investigation of the packing industry impresses us with the idea that those packers certainly worked up a great organization. What they may have done that should not have been done will come out in the wash of government action, but leaving this aside we can admire team work secured through organization.

GOOD SIGNS OF THE TIMES.

There are always good signs of the times if we will but just look for and find them. Right now a cheering bright spot of this kind is found in connection with building and loan associations. At first it looked like these, as well as actual building operations would suffer from the war. But while the first Liberty Loan caused some unsettlement, the associations and their members have gradually adjusted themselves so that the end of the fiscal year 1917-18 shows actual increases. This is taken as unmistakable evidence that we are not only learning and practicing thrift as a people, but the home building spirit is being kept alive, so that with all the financial drains of war's calls money is being found and laid by for future home building. Could there be a better sign of the times for men who make building material?

During the past fifteen years, according to official figures, the membership of building and loan associations has increased 150 per cent., and since the war broke out in 1914 there has been an increase of 52 per cent. And, best of all, there has been an increase every year of the war. The total building and loan membership of the country at the end of the fiscal year 1917-18 was 3,838,612, with association assets of $1,769,142,175, as compared to a membership of 3,568,342, and assets of $1,696,707,041 the previous year.

That this speaks well for the prospects for home building when the war ends is obvious. When driven to it we take to thrift in the same hearty and thorough manner that we take to soldiering.

THE BRICK OUTLOOK.

Conditions in the brick trade are such that the man who needs the brick has most of the worries. The necessary demand for brick will easily consume all that are on hand or that can be made this year. The brick manufacturers' troubles and limitations come mainly from a shortage of help. Fuel is curtailed, but the present indications are that there will be enough fuel to operate all the plants that can be manned, and the main source of worry is to get help. There is, in most of the country at least, a ready market at good prices for all the brick on hand or that is likely to be produced.

EIGHT TO ONE.

Some one has figured it out that for every active man at the fighting front eight are required in industry to furnish sustenance and munitions. On that basis, when we complete our army of five million men it will mean forty million men (or women) to supply all the needs of the army including food and clothing. From this it is easy to understand why we must turn so much of our man power to the essentials, and it is also easy to understand what a big part the women are playing by helping out all around. They count big in the eight left at home even if they cannot count among the active fighters at the front.

THE FEDERAL TRADE COMMISSION.

A few years back, when Edward N. Hurley, who was at that time an active member of the Federal Trade Commission, made the announcement that it was the purpose of the commission to be to the industrial world something like what the Department of Agriculture is to the farmers, and there soon grew up a feeling that at last we were to have co-operation between the government and the business industries of the country instead of the popular cry against big and prosperous business as a sort of political play for public favor. But things have changed and for a year or two now we have heard rumblings and grumblings which indicated some disposition to go back to the old tactics of tearing down instead of building up business.

Now the grumbling and dissatisfaction has finally grown to the point of specific complaint against the Federal Trade Commission for unfairness, made by the U. S. Chamber of Commerce, and, whether this results in all the reforms sought or not, it serves to bring the matter to an issue and in the course of time we will be able to understand better just what the attitude of the government toward business through the Federal Trade Commission is to be.

It is always easy to complain and to find fault, and it remains to be seen whether or not the commission has justified all the criticism of it. We must of course recognize the fact that these are trying times, and that it is essential to curb greedy and unscrupulous business methods as well as to assist business in general. But to the onlooker it seems as if there has been too much disposition to do curbing and not enough of the active co-operating with business that we have been led to expect on the part of the Federal Trade Commission.

TIGHTENING DOWN ON PRIVATE OPINION.

At this writing there are in hand reports of plans being perfected to restrict civilian or private building through which, with the exception of repairs and alterations not involving an aggregate cost in excess of $2,500, and direct and indirect war construction, permits will have to be secured for private building undertakings. Application for such permits, it seems, will have to be made through state councils of defence, but final authority is to rest with the Non-War Construction Section of the Priorities Division of the War Industries Board at Washington.

TRUCKS AND THEIR DRIVERS.

No matter what the particular line of business, when you find a man who is dissatisfied with the use of motor trucks for hauling, about nine times out of ten the seat of the trouble can be traced to the drivers. The life, usefulness, and general success of a motor truck depends more upon the driver than on any other one factor, and the man who is able to get a good driver generally gets good service from his truck. Right now, with so many good men gone to war, the good drivers are scarce, but the use of trucks in war service is helping to train drivers so that when it is all over they should be plentiful. Meantime, if you are having truck trouble look to the driver and his care of the machine.

THE BRICK DOLLAR A COMMUNITY DOLLAR.

We feel moved by incidents and comments of the times to remark that the brick men and other clayworkers of the country are not lacking in enterprise, and that there is nothing in the present situation for the trade to feel gloomy over or talk pessimistic about. The signs of the times point plainly to a new era in building operations in which the idea of permanence will dominate, and in which clay products will find an ever-widening use.

We have remarked ourselves that the cement men are always on the job, and that the lumbermen are widely organized and pushing, all of which is commendable enterprise and at times makes the clayworking fraternity seem slow in comparison. Also we hear complaints especially about the slowness and do-nothingism of the common brick men. But there is a logical and understandable answer to all this. The common brick business differs from that of practically all other building materials in that it is more largely a local business. Cement is shipped the country over, and to foreign lands, as is also lumber, steel and roofing. Even face brick and hollow tile have a wide distribution, which creates a condition materially different in the matter of effective nation-wide organization. Thoughtful consideration of this fact will reassure some of the doubting Thomases and we may add that while there is always room to improve organized effort, and to show more enterprise, the brick men of the country have not been asleep, and are not lacking in either perception or enterprise in comparison with other business men.

Moreover, there is that in the matter of the common brick business being largely a local business which constitutes an asset in business development even though it may seem a handicap to wide organization work. It carries the ever appealing plea of spending the money for building material at home. The brick dollar is a community dollar, which does much more service for the people in the community than does the dollar sent to a distant mill for lumber, cement and other material made at distant points. And we feel like venturing a prophecy that in the days to come the brick dollar propaganda will make a great mark for itself. Meantime, let us cut out the gloomy grouches, for there is a day coming which will be bright for the trade in proportion to the hearty and cheerful spirit put into it.

DETROIT BRICKMAKERS ONE HUNDRED PERCENT LOYAL.

Detroit is proud of its Americanism, and the brickmakers of that city have an unsurpassed record, every brickmaker having sons has one or more in actual service. A majority of them have followed the flag to foreign soil. This is a record to be proud of, and the boys when they return home will be accorded a patriotic welcome, such as befits one hundred percent Americans.

WOMEN TO BE EMPLOYED IN OHIO POTTERY PLANTS.

For the first time in the history of the pottery business, women are to be employed to fill the places of men made vacant by the draft. One pottery in East Liverpool, Ohio, recently advertised for forty girl mold runners. They will be paid $2.50 a day when they have learned the job. Heretofore women have been employed only in the warehouse and decorating department.

THE NEXT BOND ISSUE.

It is announced that the campaign for the Fourth Liberty Loan will probably begin at the end of September, and general preparations for it are now in progress. This issue will be bigger than any that have gone before, but it is figured that it will be taken up just as readily because more people are in better shape as well as better prepared for it. There were over 17 million subscribers to the Third Loan and more are expected for the Fourth. That is the great purpose of the campaign to have the loan distributed among as many as possible, which is better for more people as well as for the finances of the country.

APPOINTMENTS TO UNIVERSITY STAFF.

Dean C. R. Richards, of the College of Engineering, University of Illinois, at Urbana, Ill., announces the following new appointments to its staff:

Rexford Newcomb, Assistant Professor of Architecture.

Thomas Edward O'Donnell, Instructor in Architecture.

Wallace Bright Livesay, Instructor in Architectural Engineering.

Charles Leonard Morgan, Instructor in Free-Hand Drawing.

Walter Elwood Farnham, Instructor in General Engineering Drawing.

Randolph P. Hoelscher, Instructor in General Engineering Drawing.

James Earl Robertson, Instructor in General Engineering Drawing.

Maurice Leon Cornelius, as Half-Time Student Assistant in General Engineering Drawing.

Edgar McNaughton, Associate in Mechanical Engineering.

Earl D. Hay, Associate in Machine Design.

Hussein Halouk Fikret, Instructor in Mechanical Engineering.

Francis A. Hobart, Instructor in Machine Shop Practice Engineering.

William Walter Merryman, Assistant in Physics.

Everett Edgar King, Professor of Railway Civil Engineering.

James Theron Rood, Professor of Railway Electrical Engineering.

Clemence William Hippard, Research Graduate Assistant in Mining Engineering.

Han Ho Huang, Research Graduate Assistant in Mining and Management.

Martha Isabella McQueen, Research Graduate Assistant in Ceramic Engineering.

Samuel Russell Offutt, Research Graduate Assistant in Civil Engineering.

William Louis Schwalbe, Research Graduate Assistant in Theoretical and Applied Mechanics.

George Reed Shelton, Research Graduate Assistant in Ceramic Engineering.

Table of Contents

Importance of Highways....223
From Camp to Camp in Motor Car....228
Drain Tile and Sewer Pipe..228
Fuel Economy in Burning Clay Products....229
The Pledge Idea Spreads...232
Effect of Structure in Refractoriness....233
Boiler Wall Repairing......235
A Boon to Soft Mud Brick Manufacturers....235
Burning Clay Wares......236
Corn Versus Cash....238
Clay Exhibit at Chemical Exposition....239
Getting Brick Lore to Lumber Dealers....239
Machinery Prospects in South America....240
Industry and the Government....241
Additional Power from Lineshaft by Turbine.........242
American Ceramic Society to Hold Meeting....244
What a Soldier Costs......244
Proper Drainage Means Much to a Road....244
Some Shifting in Magnesite.245
The War Service Work.....245
A Courtesy Order....245
Obituary—Death of Wm. A. Bailey....248
A Wise Business View.....248
Building Relieved from Restriction....268
Survey of Fire Prevention Conditions at Ports Begun....268

CORRESPONDENCE:

Information Wanted Relative to Chimneys....246
Concrete Not Adapted to Chimney Construction.....246
Good Place for Pyrometers..246
New York Brick Man Goes to France with Construction Division....246
Wants Machinery for Making Adobe Brick....246
Brick Manufacturers Entitled to a Fair Return...246
Suggestions for Utilization of Brick Dryers....247
Percentage of Fuel Required in Burning Brick and Hollow Tile....247
A Kiln Man's Estimates....247
Pacific Coast News....263
Brick and Building News of Evansville....266
With Cincinnati Brick Men..270

EDITORIAL:

Current Comment.... 258
Good Signs of the Times.....258
The Brick Outlook....259
Eight to One....259
The Federal Trade Commission....259
Tightening Down on Private Opinion....259
Trucks and Their Drivers..259
The Brick Dollar a Community Dollar....259
Detroit Brickmakers One Hundred Percent Loyal...260
A Universal Mileage Ticket..260
The Next Bond Issue.......260

MISCELLANY:

Cheerful Fuel News....227
Vorn Versus Cash....238
Tax Luncheon Bills....239
Lakewood Line Takes Over New Interests....268
A Little Monkey Business...249

INDEX TO ADVERTISEMENTS ON PAGE 274.

WANTED.

Second-hand steam shovel, 7/8-yard or smaller. State prices and location. Address T. P. Plumridge, Batesville, Ark.
9-1pm

WANTED.

BRICK PLANT FOREMAN. In South America. Three year contract at $250 per month. Transportation paid there and back. Apply,
Business Men's Clearing House, Chamber of Commerce Bldg., Denver, Colo.
9 1 dm

FOR SALE.

Fifty acres gritless, plastic white kaolin. Ten inch overburden. Near main line of railway, 40 miles to seaport city of 75,000 inhabitants. For further information address,
PIERRE ROBERT,
9 1 1pm Garnett, So. Car.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

AS A RESULT OF AN ORDER issued by the Fuel Administrator the brick manufacturers who use coal screenings as fuel are permitted to buy this class of fuel as freely as they like fromAugust 10 to September 10. A further concession made to the trade allows them to use this class of fuel as freely as they desire during the rest of the year, irrespective of previous fuel orders. A good many of the larger manufacturers had already a fuel supply of this kind, enough to permit them to run at full capacity for the year, but their output was restricted by the previous orders. Other manufacturers who were getting low and were contemplating a shut-down have been buying freely and are now pretty well supplied. It is understood that these fuel restrictions were modified rather to relieve the fuel companies, who had not been able to dispose of their surplus screenings, than to relieve the brick manufacturers. This viewpoint is sustained by the closer drawing of the lines on building operations by the Government. Not only are all financial issues of over $100,000 subject to the control of the Federal Securities Committee, but smaller investments in the building lines are subject to very close scrutiny. To the War Service Committee the Pacific Coast is known as Region No. 19, and while there is some confusion in the matter, it appears that Fred J. Koster, president of the San Francisco Chamber of Commerce, is a true dictator in all building matters which exceed an investment of over $2,500. Mr. Koster has the title of Director of Region No. 19, and his appointment comes from the War Service Committee. Under this committee the Clay Products Manufacturers of the Coast organized last month and appointed their chairmen and secretaries, and W. W. Dennis, manager of the McNear Brick Co., began to make a survey of the Coast brick manufacturers. Now, according to George R. Chambers, vice president of Gladding, McBean & Co., a communication has just been received, which places the control of the industry under the War Resources Committee. Mr. Chambers says that the communication he received this week says that the War Service Committee was organized by the U. S. Chamber of Commerce and the War Resources Committee was organized by the Government itself. However, the latter committee recognizes the divisional name for the Coast, Region No. 19, and apparently accepts the directorship of Mr. Koster. However, it calls for direct dealings with itself from the Clay Products industry and in that respect seems to succeed the War Service Committee. The communication gives instructions regarding the organization of the industry and the California Clay Products Manufacturers held a meeting this week and organized according to these instructions. As a result there are now two methods of organization, both in good standing, and apparently two heads. It looks like duplication to the local brick men, but they feel they are now ready to meet the law in whatever aspect it may eventually develop.

On August 28, W. W. Dennis, who had been making a survey of the Coast brick industry under instructions of the War Service Committee, was "called to Washington for consultation." Mr. Dennis said he did not know the reason for the call, but he went prepared to give results as far as his investigation had gone.

George R. Chambers, vice president of Gladding, McBean & Co., says that the fire insurance adjusters have not concluded their appraisal of the damage done to the company's plant by the recent fire at Lincoln. The building which was merely damaged has been appraised and the repairing of this part of the plant is already under way. The engineers have not yet completed plans for the new plant, but Mr. Chambers says that it will embrace all known modern improvements of manufacture. When this insurance matter is adjusted it will probably be necessary to get the permission of Fred J. Koster to make purchases of necessary material. As the plant will be rebuilt with funds coming from the insurance companies there will be no need to have the additional permission of the Federal Securities Issue Committee. Mr. Chambers intimated that there was a difference of opinion between the adjusters and the company over the wide margin between the original cost of the machinery and its present replacement cost.

While general construction is discouraged by the Government it has not ceased by any means and a constant demand is being made for bricks in work for Government uses. Fire brick is in great demand and the manufacturers have orders booked far ahead. The Stockton Fire & Enamel Brick Co. says it has orders enough to keep its plant running at full capacity for the rest of the year. For that reason this company made no effort to bid on the large order of brick for the Hercules Powder Co., at Richmond, for which bids were recently called. This new structure will use at least a million fire bricks and some 400 tons of hand-moulded blocks. Delivery must begin within the next two months. The Stockton company says that the only way it could handle such a contract would be to side-track all other business. The common brick and sewer pipe men are looking forward to the construction of a large number of workmen cottages in connection with the Mare Island Navy Yard, and the various shipbuilding companies about the bay. There will probably be in excess of 500 of these cottages built in the near future. In connection with the buildings for the navy yard ten carloads or more of sewer pipe will be needed and as much more has been contracted for the city of Martinez. The Porta Costa Brick Yards got both these contracts. The Pacific Coast Shipbuilding Company is constructing a new town, called Clyde, near its plant at Bay Point. The sewer contract has not yet been let, but it doubtless will amount to as much as either of the other two mentioned.

The Government is building a steel frame hollow tile structural building at the Mare Island Navy Yard. As the building is to be 320x700 feet in dimensions the order for tile will be considerable.

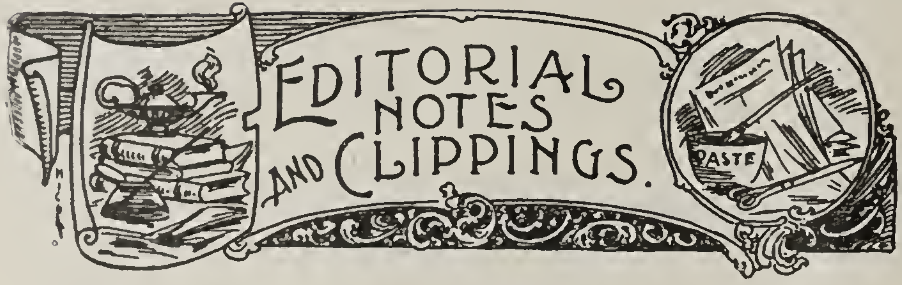
The Porta Costa Brick Works has been successful in several important bids recently. Among them was 1,000,000 bricks for the Wagner Leather Company, which is rebuilding its tannery at Stockton, after its destruction last month by fire. The Chevrolet Auto Company is making additions to its branch factory in Oakland and the Porta Costa company was again successful in bids for 65,000 face and 250,000 common brick.

The Schacht Auto Truck Company is planning to erect a large factory in Stockton, and has called for bids on the bricks. Plans of the building and the number of bricks needed are not made public, but it is said that the factory building will be among the largest in the city of Stockton.

The growing demand for magnesite brick has encouraged the Porterville Magnesite to start its plant again under full headway. Although the northern mines can quarry their ore at a cheaper rate than the California mines can be worked the demand is sufficient to pay the Porterville company to run again at capacity. The company has been in a semi-closed condition during the past few months on account of difficulties in making shipments, but the local representative says that this has apparently been overcome and he expects the mine to be worked at full capacity from now on.

San Francisco, Cal. SUNSET.

BUILD WITH BRICK



EDITORIAL NOTES AND CLIPPINGS.

The Copeland-Inglis Shale Brick Company, at Birmingham, Ala., plans to increase the monthly output of their plant to 2,000,000.

D. H. Haeger, manager of the Haeger Brick & Tile Co., of Dundee and Aurora, Ill., was recently elected president of the Board of Education of Dundee.

The Ada Brick Company, of Ada, Okla., has been chartered with $25,000 capital stock by E. D. Young, of Ada, John R. Harris, of Oklahoma City, and others.

The plant of the A. G. Kahn Brick Company, of Selma, Ala., which was damaged to the extent of $15,000 by fire recently, will rebuild the burned portion at once.

The plant of the Salem China Company at Salem, Ohio, has been purchased by F. A. Sebring, Sebring, Ohio, and will be enlarged by the erection of several additional kilns.

Clifford A. S. Coe, secretary and treasurer of the Lancaster Brick & Tile Company, Buffalo, N. Y., died at his home in that city, August 19th. Mr. Coe was 82 years old and is survived by his widow.

The Hebron Fire & Pressed Brick Co., Hebron, N. Dak., has been quite busy the past summer turning out hollow tile, for which they had found quite a demand in that vicinity due to the extraordinary high price of lumber.

The Campbell Clay Co. has been incorporated at Wilmington, Del., to buy, sell and deal in clay lands, mining rights, etc., by C. L. Rimlimger, F. A. Armstrong and B. A. Spangler, of Wilmington. The company is incorporated at $100,000.

E. H. Boynton of New York is at the head of a concern which will erect an immense silica brick plant at Sydney, Nova Scotia. Work on the plant is to be started at once, and it is hoped to have the plant ready for operation within six months.

A fire which broke out in the building used as oil house, fan room and blacksmith shop of the Watsontown Brick Company, Watsontown, Pa., for a time threatened the whole plant, but by hard work on the part of the firemen was confined to the building in which it originated.

The New England Brick Company, Boston, Mass., reported a fair trade, having booked a government order for 1,500,000 brick for a storage building and the same week an order for 400,000 for a building for the New England Bakery Co., at Somerville.

The Martin Twin Brick Company of New York has been incorporated with $250,000 capital stock. R. F. Martin, 22 Post Ave., Bronx, New York City, is at the head of the enterprise, and has associated with him a number of New York capitalists.

One man was killed and two men seriously injured as the result of a boiler explosion at the plant of the Clarion Brick Company at St. Charles, near New Bethlehem, Pa. E. S. Shumaker, superintendent of the plant, sustained badly fractured leg and severe scalp wounds.

After five weeks of idleness the Heckard & Sons brickyard at Canton, Ill., resumed operations September 1, having obtained a government contract for over a million face brick. The plant previously had covered its allotted quota for the season in general output, but the necessity of meeting the government requisition for brick supplies makes a resumption of operations immediately necessary.

The Calloway County Clay Co., of Murray, Ky., has been incorporated with $2,500 capital stock. W. H. Finney, W. S. Swann and T. H. Stokes are interested.

The Cutler Brick Company of Cutler, Del., has been incorporated with $25,000 capital stock. C. L. Rimlnger, M. M. Clancy, and P. B. Drew, of Wilmington, are named as incorporators.

The Portsmouth Refractories Company is making several additions to its large plant at East Portsmouth, Ohio. A drying shed over 100 feet long and 30 feet wide has been built at the east side of the plant.

The Harbison-Walker Refractories Company, Pittsburgh, in August declared the regular quarterly dividend of 1½ per cent on the common stock, payable September 2, to stock of record August 20.

The plant of the Lester Clay Company at Attapulgus, Ga., was completely destroyed by fire August 25. This is one of the oldest and largest Fuller's earth mines in the country. The origin of the fire is unknown.

Vaughn Crum, seventeen year old son of H. B. Crum, superintendent of the Mansfield, Ohio, plant of the American Clay Machinery Co., was almost instantly killed as the result of an automobile accident, at which time Dean Maxwell, an employe of the company, was also killed.

John F. McKay, sales manager of the Cleveland Hydraulic Press Brick Company, has been accepted for Y. M. C. A. services overseas, and left Cleveland September 11 for New York, and thence to France. Mr. McKay's special line of work will be with the motor transports.

Fire starting from crossed electric wires ignited a large pile of coal in the yards of the Northwestern Coal Company on Claybourne Ave., Chicago, and caused a loss of $2,000 before the flames were extinguished. For a time the entire plant was threatened.

The employes at the plant of the Savage Mountain Brick Company, Frostburg, Md., went out on a strike recently, but the trouble was adjusted through the mediation of the Federal Department of Labor and the entire force resumed work within a few days.

As an example of getting in other lines of business during the war, it is announced that the Vesper Brick & Tile Co., Vesper, Wis., is contemplating the establishment of an industry for the manufacture of coke from peat, which is present in abundance in the vicinity of its present plant. The new industry is to be capitalized at $500,000.

In keeping with the aggressive policy that has always characterized the firm of J. C. Steele & Sons, of Statesville, N. C., they have turned their attention to other lines, and now announce that owing to the curtailment of the clayworking plants on account of the war, they are in a position to take contracts for other than clayworking machinery. Steele & Sons have been making brickmaking machinery for years and their readiness to adapt the plant to another class of machinery speaks well for their patriotism and business acumen.

The annual meeting of the American Peat Society will be held at Hotel McAlpin, New York, September 25, 26 and 27. It is anticipated that information of great help not only to those engaged in the peat industry, but in other industries where large quantities of fuel are used, will be disseminated. Those interested may obtain a copy of program, etc., by addressing Charles Knapp, secretary, 17 Battery Place, New York City.

(Continued on page 268)

25% SAVING

and usually more

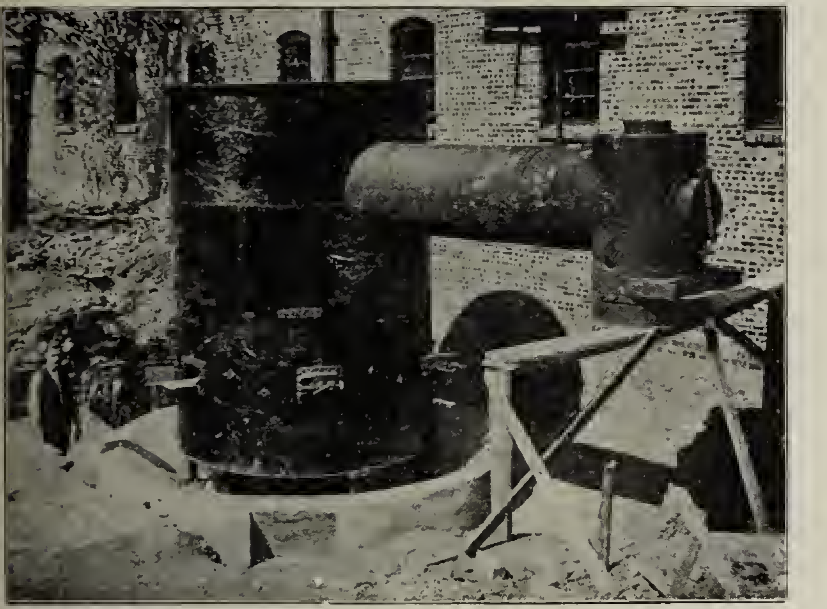
In Coal and in Labor

Construction of two
International Producers

Will be made by
the application of

PRODUCER GAS

to your Kilns



Construction 1-7 ft.
Producer for Pottery Kiln

Whether you burn
Brick, Tile or Pottery

INTERNATIONAL PRODUCERS

and forced Draft

BURNERS

can be adapted to your Kilns

Remember your coal troubles last winter

Write us today

International Clay Machinery Co.

DAYTON, OHIO

BRICK AND BUILDING NEWS OF EVANSVILLE AND SOUTHERN INDIANA.

BRICK AND TILE manufacturers of Evansville and southern Indiana towns are anxious to get war work from the Government and most of the manufacturers of that section have joined the Evansville sub-district of the Cincinnati regional on war contracts that was organized at a meeting held in Evansville several months ago. Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Company; Aaron M. Weil, president of the Crown Pottery Company at Evansville; Michael D. Helfrich, president of the Sanitary Pottery Company at Evansville, and Henry M. Clemens, manager of the Cannelton Sewer Pipe Company at Cannelton, Ind., were instrumental in the organization of the Evansville subdivision, and they have been active in the organization of the sub-division into counties, and great good is expected to result from the organization. There was a meeting of manufacturers at Evansville a few days ago, at which it was decided to send a committee of three to Washington, D. C., to attempt and secure more war contracts for the Evansville sub-division. Mr. Clemens attended the Evansville meeting and gave his experience of a visit to Washington recently to meet the sewer pipe men of the country. He stated that 75 per cent of the manufacturers were on hand and that they had met in a fine spirit. They had been classed with building material men and when the meeting wasover they were placed in the sanitary division of war work. The meeting of the sewer pipe men was fruitful, Mr. Clemens reported. According to Mr. Clemens conditions now in Washington are such that any committee that is sent there on war contract work should go prepared to stay for any length of time. If the committee gets an audience in a week or ten days it will be doing well, he thought. He said the men who are in charge of the government work "are as busy as bees" and any committee visiting there will have to take the time to get an opportunity of stating its mission. "The men in Washington, who are working for a dollar a year," said Mr. Clemens, "are working much harder than we out west are. They are most accommodating and are practically on the job day and night." Both the brick and sewer pipe manufacturers of southern Indiana are expecting to get their full share of the government work during the next three or four months.

Trade with the brick and sewer pipe manufacturers of southern Indiana is about like it was last month, and, in fact, there has been little or no change in the situation. The plants that are running at all are being operated in most instances on short schedule and a few of the plants are closed down and from present indications some of them will not resume operation the rest of the year.

The new high school building at Evansville has been completed and is now occupied. The brick for this handsome structure was furnished by the Standard Brick Manufacturing Company, which company also has had a few other nice jobs this season. John Andres, the secretary and treasurer of the company, stated a few days ago that while things are looking a little blue for the manufacturers he believed that they would all "weather the storm all right and be in good position after the great war to handle the great lot of business that is likely to be had then."

Several manufacturers in Evansville are contemplating additions to their plants, but none of these improvements contemplated will be built this year and perhaps not until after the war.

A new bank has been organized at Dale, Ind., and a new brick building will be erected in a short time to house the new institution.

Aaron M. Weil, president of the Crown Pottery Company at Evansville, Ind., is back from Atlantic City, where he spent several weeks. Mr. Weil has been selected as a member of the war labor board in Vanderburg county and has assumed his new duties. This work will consume a great deal of his time, it is believed.

Michael D. Helfrich, president of the Sanitary Pottery Company at Evansville, Ind., recently purchased a large timber tract on the Cumberland river in western Kentucky, which he will hold for speculative purposes. In addition to being in the pottery business, Mr. Helfrich has extensive timber sawmill interests.

Ernest Densslatt, aged 30 years, formerly connected with the Sanitary Pottery Company at Evansville, Ind., has been wounded in action, according to word received by his friends at Evansville. Denslatt is in the United States infantry in France and went overseas several months ago.

James G. Hill, receiver for the Rockport Drain Tile Company at Rockport, Ind., in a short time will offer the plant of the company for sale to satisfy all claims against the same. The factory has been closed down all summer. Mr. Hill was appointed receiver for the company several weeks ago.

Henry C. Murphy, sales manager for the Fourth Liberty Loan campaign at Evansville, Ind., has named committees of five hundred of the most prominent manufacturers and business men of that city to take charge of the drive that will begin on September 28th and continue until $6,000,000 worth of bonds have been sold. Among those appointed on the various teams by Mr. Murphy are Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Company; Aaron M. Weil, president of the Crown Pottery Company, and Michael D. Helfrich, president of the Sanitary Pottery Company. These men will help to put Evansville and Vanderburg county over "with a whoop." At Cannelton, Ind., Henry M. Clemens, the manager of the Cannelton Sewer Pipe Company, will take a leading part in the campaign. Since the United States became involved in the great world war the brick and tile manufacturers of southern Indiana, as well as the pottery manufacturers, have taken a leading part in all patriotic campaigns that have been waged.

Work has started on the large two-story office and store building at Henderson, Ky., that is being built by Dr. J. H. Letcher of that city. The brick for the structure is being furnished by the Kleymeyer-Klutey Company, brick makers of Henderson.

The three large pottery plants at Evansville, Ind., are being operated on steady time and the manufacturers report that this has been a busy year for them in spite of the war. Labor troubles and car shortage and other things have handicapped the pottery manufacturers, but in spite of these drawbacks they have gone right ahead and they say the outlook for fall and winter trade is very flattering.

A large number of the employes of the Cannelton Sewer Pipe Company at Cannelton, Ind., have joined the colors and quite a few of the boys are now in the front line trenches in France. Two of the boys have been wounded in action and one has been killed.

A HOOSIER.

Slow progress in rebuilding of the plant of N. Clark & Sons destroyed by fire several months ago. For a long time there were disputes with the insurance companies over the settlement. After this was adjusted the machinery market was in such a condition that it was difficult to have orders filled. However, progress is reported and if a large demand for the product appeared about to develop, it is likely that construction work could be materially hastened.

DEPENDABILITY IN PERFORMANCE
IS THE STRIKING CHARACTERISTIC OF

THE UNDERWOOD PRODUCER GAS BURNING SYSTEM

(Patented)

YOU CAN DEPEND UPON IT TO

- Save Much in Fuel
- Save Much in Labor
- Give Ideal Burning Conditions
- Reach Any Necessary Temperature
  (2600° to 2800° is easy)
- Possess a Host of Other **Real** Advantages

The above are reasons why every thinking, progressive Clayworker should investigate the system.

Moreover, every producer of Clay Products who takes into serious consideration the drastic fuel restrictions of the Government, must see in this system the one true method of burning clay products economically, and in accordance with the Government's mandates to conserve fuel.

Again, do not lose sight of conditions which will prevail after the war. Our experience now teaches us how vital it is to conserve fuel and labor, and the only way in which we can profit by this lesson is to prepare by installing dependable, economical appliances, and for the burning of clay products the Underwood system is the one best bet.

The Manufacturers Equipment Co.
Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-
Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

The Lakewood Engineering Co., of Cleveland, Ohio, announces the opening of new offices in the Lumber Exchange Building, Chicago, where they will be glad to welcome all visiting clayworkers.

L. F. Wolfe, former superintendent of the Pacific Porcelain Ware plants at Richmond, is now in the navy and is employed as fireman on a submarine chaser on the Atlantic Coast. He recently visited his home town on a brief furlough after his period of training at San Diego and then left for the east coast.

Two rather unusual suits have been filed against the Arkansas Brick & Mfg. Co., of Little Rock, Ark. During a rain storm in July two men took refuge in a freight car standing on the company's siding, and while there the company's employes loosened the brakes of the freight car, which bumped into a loaded car of brick, and the men were killed. Now the administrators of the estate of the two men are bringing suit for damages.

The new plant of the Wellsville Fire Brick Company, Wellsville, Mo., is rapidly near completion, when the output will approximate 100,000 fire brick per day. Six kilns of 150,000 capacity have been finished and eight or ten more are under construction. The clay will be brought from mines on an elevated track and dumped into storage pits holding about 15,000 tons. Superintendent Kiger expects the plant to be turning out brick in good order by the latter part of October.

The Birmingham Clay Products Company at Birmingham, Ala., has recently been incorporated with our good friend, John W. Sibley, as vice-president and general manager, and has taken over the old plant and property of the Sibley-Menge Brick Company. They have large contracts from the government, contracts that will keep them going to full capacity right from the start. W. L. Sibley, who has been operating a brick plant in Virginia for some five years, will be general superintendent of the plant.

J. Garce, of Southern Chili, South America, has been spending some time in this country buying machinery. Mr. Garce and his brother are the principal owners of the Southern Chili pottery-clay beds and they are getting ready to manufacture chinaware of a very high grade in their native country. They are also largely interested in the oil fields of Southern Chili. Mr. Garce said he wishes to interest American capital in his clay and oil properties in Southern Chili, but will make no attempt to do so until after the war.

Details have been completed in connection with the recent incorporation of the Hicks Fire Clay Products Co., Springfield, Ill., which according to an announcement will develop 150 acres of fire clay at Drake, Ill. According to present plans a plant will be built in Springfield immediately. The company at first will manufacture fire bricks, but later will make other clay products. The plant at Springfield will have a capacity of 50,000 bricks a day. The officers of the company are W. C. Holmes, president; C. T. Hicks, vice-president; E. C. Pearce, secretary, and J. C. McGrath, treasurer. The present office of the company is Room 2, I. O. O. F. Temple, Springfield, Ill.

LAKEWOOD LINE TAKES OVER NEW INTERESTS.

The Charles T. Topping Machinery Company has merged its interest with the Pittsburg office of the Lakewood Engineering Company, manufacturers of the Lakewood line of dryer cars, mud cars, clay cars, rack cars, tractors, trucks and trailers. The Topping company states in its announcement that its desire to "link up with Lakewood" is based on its confidence in the Lakewood line, the character of the organization and ability to give reliable service. The Pittsburg office of the Lakewood Engineering Company is located at 411 Fulton Building.

BUILDING RELIEVED FROM RESTRICTION

Paralysis Resulted from Hold-up of Material by Agreement With Federal Officials—Work Begun May Be Finished.

Following a conference between the producers of building materials and the War Industries Board in Washington, an agreement was reached which provided that building material should be furnished only for war projects, and that all other building projects must have official sanction in the shape of a permit before materials could be supplied to them. As a result of this agreement the sale of building materials in New York city was suddenyl stopped and a large number of building projects, which were partially completed, were held up, causing great confusion and much protest.

Building Operations Paralyzed.

Members of The Merchants' Association of New York appealed to it for assistance, pointing out that practically all building operations throughout the city had been paralyzed. Protest was immediately made to Washington and the situation was reionsidered there in the light of the facts presented.

President William Fellowes Morgan, who is also Regional Adviser for the Resources and Conversion Section of the War Industries Board in that district, was notified recently by Mr. Charles A. Otis, Chief of the Section, that official permission had been issued for the continuance of buildings now in process of construction until further notice without permit, but that new construction of all kinds must be authorized by permits issued from the Building Material Section of the War Industries Board after favorable recommendation from the State Council of Defense.

As originally contemplated, the building regulation provided that Mr. Morgan, as Regional Adviser, must approve building permits, but later this was modified so as to give him jurisdiction only over war building projects. The final order removes the matter entirely from his jurisdiction and places it in the jurisdiction of the State Council of Defense.

SURVEY OF FIRE PREVENTION CONDITIONS AT PORTS BEGUN.

B. M. Baruch, chairman of the War Industries Board, authorizes the following:

The fire prevention section of the War Industries Board, at the request of Attorney General Gregory, has undertaken a survey of conditions at the principal ports on the seaboards and the Great Lakes with a view to suggestions for reforms, if necessary, that will lessen dangers from destructive fires.

Special attention will be given by experts of the section to fire-prevention equipment and constructions in and about government buildings, properties, piers, and warehouses.

Since its organization April 5, the fire-prevention section, of which W. H. Merrill is the head, has inspected 1,469 munition plants having important government contracts. These were classified according to their qualities as fire risks, as follows:

Good, or no action required	1,142
Fair	136
Poor	118
Bad	73

Examinations have been made of 195 additional plants, and reports ordered on 223 others. A plant may consist of from 1 to 50 builidngs.

We all waste a lot of time cultivating the good opinion of people whose opinions are not really worth while.

CONSERVE.

FUEL--LABOR--TIME

BY INSTALLING THE

"MINTER SYSTEM."

THE APPLICATION OF CONTINUOUS BURNING TO ROUND DOWN-DRAFT KILNS.

This New Application has been in actual operation for over a year in our Plant, with the result that its efficiency and pracitability has been established beyond all experimentation.

IT SAVES MONEY by reducing labor, fuel, time and expense in burning, and in producing a product which is more evenly and perfectly burned.

"THE MINTER SYSTEM" may be installed at comparatively small cost on Round Down-Draft Kilns already built, but when installed in New Construction "THE MINTER SYSTEM" results in a material reduction of building cost, on account of the fewer number of kilns required for desired output.

WRITE US FOR FULL DETAILS.

--PATENT GRANTED--

FLINT RIVER BRICK CO.,

Albany, Ga.

COAL

CLAYWORKERS!
ATTENTION! !

Your industry is largely in the non-essential class, it uses a large tonnage of coal, and it is badly handicapped by the Government restrictions.

Why not get in an essential industry—the most essential of all. You have the equipment, now idle or it soon will be. Put it at work digging coal.

Coal mining is very profitable, and the most profitable method is by stripping where conditions are suitable. Such situations are very limited and there is not room for all but greater profit for a few.

We have two large tracts of high grade coal, ideal for stripping operations, in the heart of the Ohio coal field. Let us tell you about them.

W. E. HAMILTON & CO.,
310 Schultz Block Columbus, Ohio.

WITH CINCINNATI BRICK MEN.

THESE ARE DULL DAYS in the clay industry here. The outlook for the remainder of the year is not very bright. There is no particular reason why the future should offer any very promising returns. The Government has discouraged all unnecessary building, and the people are in accord with this viewpoint of a very urgent matter. So the clay men are acting in the same way, and trying to make the most of the situation.

Just how far the demands are off now for building materials and to what extent the number of permits has fallen can be noted in the report from the building department here, which is, after all, the real test. Of course the war has been responsible for this, and its full realization can not be doubted. But the clay men are patriotic, and they are still going forward with a smile in the face of a condition that is by no means an encouraging one.

Here is the summary of the report for the month of August for the past three years. In 1916 there were 1,546 permits granted. These represent a cost of $1,328,490. For the next year the number of permits was 1,086 that amounted to $926,795, and for the present year there were issued only 936 permits that called for an outlay of $323,310. Even the comparison of the past eight months shows a decline, so that the trend has been decidedly downward for the first two-thirds of the present year. There are a number of additions being made here that will demand some kinds of clay products for their construction, and this helps out at this time, but there is not enough to make the situation near normal.

Work on the new nitrate plant near this city is under way, some of the temporary buildings having been constructed and a large number of men given employment. Things have begun to take on a business-like atmosphere and the future will see a great deal of construction undertaken here as the months go by. This is really the only big contract that seems likely in the near future.

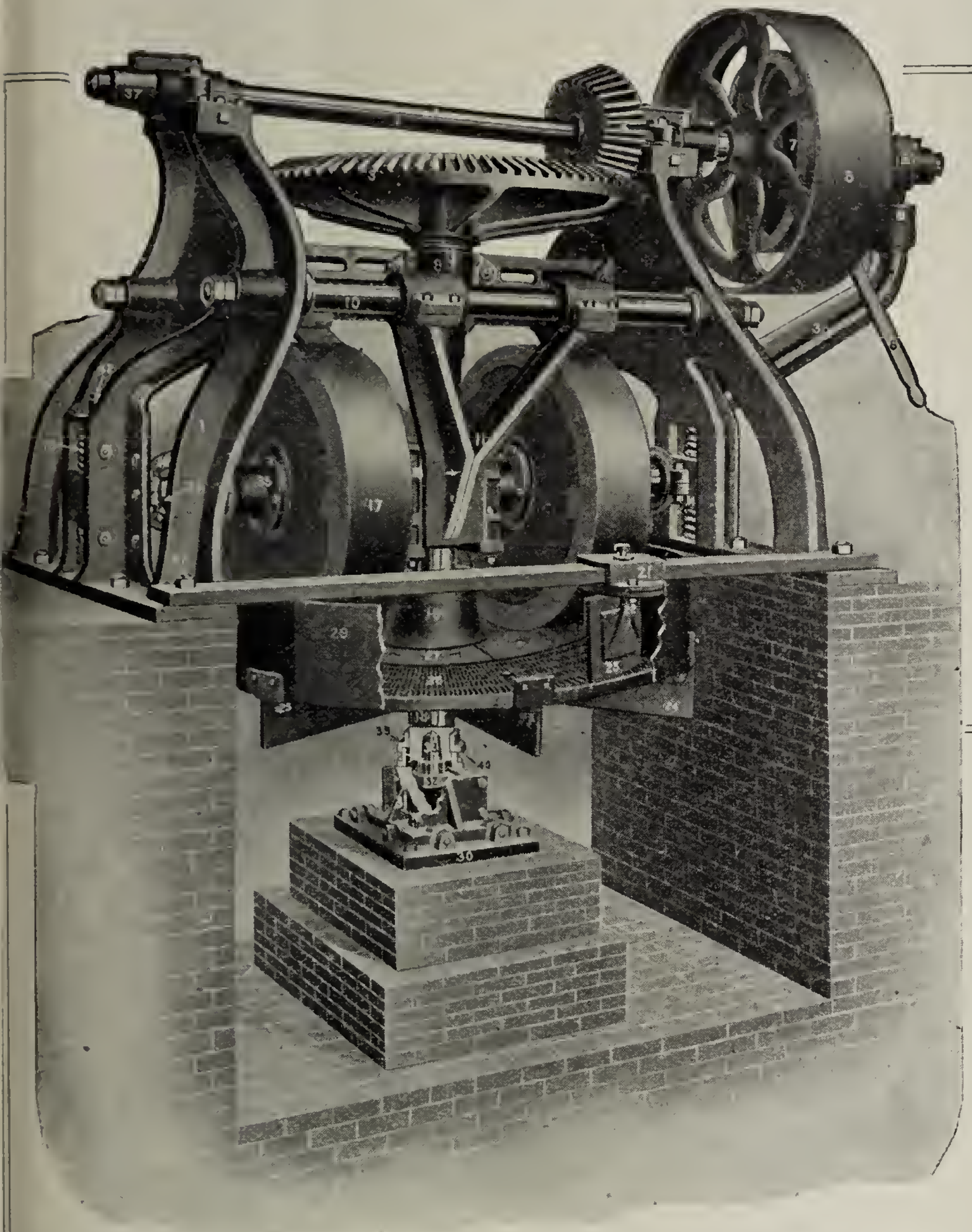
There is a possibility that the new East High School will be delayed in its completion. This building is one that is to cost a million dollars, and is now only about 60 per cent finished. An order that was received here from the War Industries Board to the effect that no school buildings can be erected might have its affect on this building. Materials have been held up here and while an effort has been made to have the needed material given priority, it is not known what the outcome will be.

There has been a change in the name of the Leibold-Gott Building Company, to that of the Leibold-Farrell Building Company. This will not make any change in the officers of the company, as Mr. Gott disposed of his interest almost a year ago to Mr. Farrell, and the latter has been identified with the company since the beginning of the year.

C. C. and E. C. Weber, architects, have been letting bids for work on two school buildings to be erected at Cynthiana, Ky. One of these will be a graded school of brick construction, and the other will be a high school, which is to be completely remodeled. With the exception of some of the walls the building will be constructed of brick and cut stone.

As an indication of the number of factory additions that are to be builded here the following shows: The Proctor and Gamble Company will build a brick, steel and concrete boiler plant to cost $45,000; the Cincinnati Iron and Steel Company will construct an addition to its plant to cost $40,000; the John H. McGowan Company will erect an addition to cost $40,000; the Hershede Hall Clock Company will make improvements to cost $25,000, and the P. W. Drackett Sons Company will build an addition to cost $13,000. CINCY.

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

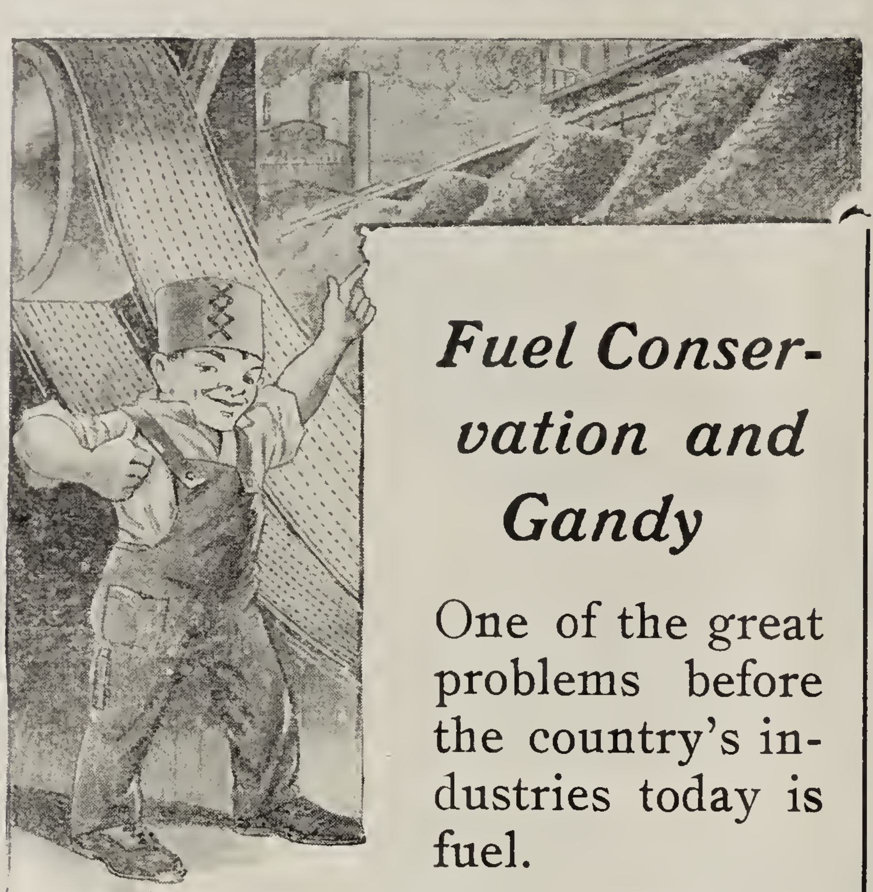
Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.



Fuel Conservation and Gandy

One of the great problems before the country's industries today is fuel.

The saving of coal and oil is absolutely vital if the nation's activities are to continue unhampered.

But saving fuel doesn't stop at shoveling less of it into the furnace--it means efficiently transmitting every available bit of energy produced by the fuel that is burned.

A saggy, slipping, flappy belt wastes more energy than it transmits.

Every time you operate one you waste fuel.

The GANDY original stitched cotton duck belt is known the world over as the belt that gets **all the pull from the pulley.**

To conserve fuel, standardize on GANDY stitched cotton duck belts.

To insure quick delivery, write today for Gandy Stock and Odd Size List of ready-for-immediate-shipment belting.

Faithfully,
"On-the-Job" GANDY
Service Manager

THE GANDY BELTING COMPANY
749 West Pratt Street BALTIMORE, MD.
New York Branch, 36 Warren St.

Look for the Green Edge and GANDY Trademark.

GANDY Stitched Cotton Duck BELT

FUEL ECONOMY IN BURNING CLAY PRODUCT.

(Continued from page 232)

It is necessary to work out a schedule for the burners which can be followed by the use of pyrometers. This schedule may be made out in the from of a table or a curve. A standard size coal shovel should be used and the number of shovels to be fired at definite intervals prescribed for each stage of the burn. Clinkering of the grates likewise must be done at definite times. Unless the firing is thus systematized or standardized it will be difficult to make the necessary changes or to compare one burn with another. In this manner it will be quite easy to shorten the firing time as much as the clay and the kind of product will permit.

Draft Control.

It is not uncommon to find a plant where a temperature curve is followed very carefully without showing any saving in fuel. This is nearly always due to excessive flow of the gases from the kiln to the stack. While during water smoking we have a deficiency of draft, toward the latter end of the firing there is usually an excess. It is evident that under such conditions too much heat will be lost at this time, with the result that the kiln bottom can not be brought to the proper temperature without the use of an excessive amount of fuel. This condition is made much worse wherever the kiln bottom is too open, allowing the hot gases to leave without meeting sufficient resistance. Such a faulty kiln bottom should be at once adjusted.

A certain amount of control is still necessary in order to regulate the outflow of gases to the desired degree. For this purpose a draft gage is employed which must always be connected to the stack flue between the kiln and damper. In inserting the iron pipe the latter must be either flush with upper surface of the flue or allowed to communicate with a space, say equal to half a brick left out in the arch of the flue. In this fashion we can measure what usually corresponds to "draft." Draft gauges are now supplied on the market in several forms and should read to one-hundredth inch of water gauge. Information as to pyrometers and draft gauges can be obtained from the industrial-furnace section.

In using the damper, attention is called to the fact that the checking effect is not proportional to the depth to which it is let down, a fallacy still commonly accepted. When closing off the top section of the flue, but little effect is produced upon the draft, since the gases pass through the opening merely with increased velocity. On the other hand, the damper when close to the flue bottom operates too effectively, and is apt to check the draft too much, due to the production of eddy currents. The damper, therefore, becomes really effective only through the middle section of the flue. A damper attached to the top of the stack would be more effective than the ordinary flue damper. Far closer control of the damper is necessary than is usually assumed, and hence it must be well fitting and the openings must be kept as tight as possible. A scale board showing the depth to which the damper has been dropped and graduated in inches and half inches is of help in controlling the draft. For each kiln a certain maximum draft should not be exceeded. For some kilns this value has been found to be equal to 0.17 inch water gauge.

Where a pyrometer is used it is very easy to fix the proper dampering of the kiln. If, upon letting down the damper to a certain depth, the temperature of the lower part of the down-draft kiln continues to rise, this would indicate that the draft can be reduced still more. This procedure is continued until the kiln ceases to gain in heat. This point then indicates the limit to which the reduction in draft may be carried. The amount of coal fired may be cut down as the damper is lowered and the temperature-time schedule followed as laid down.

The rate of settling of the ware in the kiln should invariably be determined in the case of bricks. The measurements must be made every three hours during the last stage of the burn. Where the total settle is, say, 12 inches, its amount per 12 hours should not exceed 3 inches, but it also should not be less than one-half inch for the same period. Obviously no general rules can be given for all clays, since the shrinkage varies widely. The information obtained through the settle measurements consists in showing the uniformity of the burn and especially the progress in bringing the bottom of down-draft kilns to the final temperature.

The use of Seger cones (well protected from impinging flame) is advised for all kinds of burns, using higher numbers for the top, to prevent overfiring, and the correct number for complete maturity on the bottom. Draw trials for color and shrinkage are also desirable. Draw trials pressed on a small hand press and provided when dry with scratch marks a definite distance, say, 3 inches apart, afford a very valuable indication of the progress of the burning process in the clay. These should be placed in the softer burning parts of the kiln, say, near the bottom of a down-draft kiln, and withdrawn at 3-hour intervals, during the last 24 or 30 hours of the burn. The measurement of the contraction between the shrinkage marks by means of an accurate vernier caliper thus results in a valuable index as to the degree of burning.

In the use of coal in kiln firing one of the great heat losses is that due to excess of air admitted to the kiln, especially over the fires. The smoke passing through the stack is not necessarily a sign of much heat loss, but it is the entirely smokeless firing of bituminous coal which may be responsible for a large waste of fuel, through the admission of excessive amounts of air. This is contrary to the usual opinion, but is borne out by actual facts. It is through the proper use of the damper, by keeping the kiln doors closed as tight as possible and by avoiding all leaks, that the air excess must be kept down to the minimum. Avoiding the use of any large air excess during the heat-raising stage of the burn will do much to cut down the time of firing. By means of gas analyses, for which samples are taken from the flue close to the kiln, it is possible to determine the actual amount of air excess, and to cut it down to a reasonable figure by using the means already pointed out. To a certain extent this condition may be estimated by the draft gauge readings as well.

In order to illustrate the saving of fuel which may be effected by adopting systematic burning, two charts are given here, taken from actual kiln records. It will be noted that the final temperatures necessary in firing this clay are considerably higher than those required for the ordinary red burning clays, and that, hence, with such materials it should be possible to cut down the time of firing and the amount of fuel used to lower figures than were possible in the case illustrated.

Chart I represents face brick kiln records. Here curve 7 shows the latter part of the old system of firing, which required 8 days and 16 hours. Curve 4 shows the shortest time made, 4 days and 21 hours, but curve 5 was found to represent the most economical system of firing, as in holding the heat for the last 29 hours, but little fuel was consumed, since it meant merely the replacing of the heat radiated from the kiln.

It may be taken to be a general rule that the faster the heat is raised, the longer must be the period of soaking.

If the heat is raised slowly enough no long soaking may be necessary, as the temperature becomes equalized during the heating up. Thus, curve 5 would represent good general practice. Of course, where a clay requires special care in oxidation, a halt must be made at 1,300 degrees F. to complete this phase of the firing. The mode of firing shown by curve 5 (5 days and 10 hours) resulted in a saving of fuel of 36.5 per cent.

Chart II represents the firing curves of sewer pipe kilns as finally adopted. Here curve 1 is that for small pipe, 62 hours, and curve 2 for heavy pipe, 96 hours.

It should be understood, of course, that not all saving is due to the shortening of the time of burning, but that control of the draft and systematized firing are factors equally essential.

The use of complete records showing the time, temperatures, settle, periods of firing, time of clinkering, and the amount of coal used are of prime importance in effecting fuel economies.

(Note.—The authors are indebted to Frank H. Riddle, Edmund Eckart and Andrew B. Duryee for suggestions.)

ERIE Shovel owned by the Dunn Brick Co., loading shale

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INDEX TO ADVERTISERS

Alton Brick Co.................... 220
American Clay Machinery Co., The........................261, 262
American Process Co............ 282
Anderson Foundry & Machine Works 216
Arbuckle & Co 217
Baird Machinery & Mfg. Co...... 296
Ball Engine Co..................... 273
Barr Clay Co., The........... ... 220
Books for Clayworkers 285
Bonnot Co., The.................. 211
Boss, John C...................... 274
Brewer, H. & Co.................. 291
Brown Instrument Co., The..... 218
Caldwell, H. W. & Son Co....... 279
Cameron Clay Products Co..... 220
Carnell, George................... 283
Ceramic Supply & Const. Co.... 280
Chambers Brothers Co.......... 223
Chase Foundry & Mfg. Co........ 296
Chattanooga Paint Co.......... 278
Chicago Brick Machinery Co.... 296
Chisholm, Boyd & White Co..... 214
Danville Brick Co., The.......... 220
Dennis, F. W..................... 279
Dickinson, W. W. Jr............. 222
Didier-March Co 213
Drying Clay Wares....... 288
Dunlap Manufacturing Co....... 282
Eagle Iron Works................ 280
Eastern Machinery Co., The.... 287
Engelhard, Charles.............. 283
Fate, J. D. Co., The 294, 295
Flint River Brick Co............. 269
Frost Mfg Co., The.............. 293
Freese, E. M. & Co............... 292
Gandy Belting Co................. 272
Geijsbeek Engineering Co....... 283
Hamilton & Co., W. E........... 270
Harrington & King Perforating Co...................... 212
Important Federal Laws........ 283
International Clay Machinery Co. 265
Kushequa Brick Co.............. 220
Kushequa Keramic Co........... 220
Lake Shore Shale Brick Co..... 220
Lakewood Engineering Co...... 296
Lovejoy, Ellis..................... 284
Mantel, Tile and Grate Monthly 279
Manufacturers Equipment Co., The............................ 267
Marion Machine Foundry & Supply Co...................... .. 274
Mathews Gravity Carrier Co.... 222
Mayer, C. P....................... 221
McAvoy Vitrified Brick Co...... 220
Medal Paving Block Co 220
Metropolitan Paving Brick Co.. 220
Mittler Wire Mfg. Co............ 280
Morgan, F. W. & Co.......... 221
Murphysboro Paving Brick Co.. 221
National Paving Brick Manufacturers' Association............. 220
Ohio Galvanizing & Mfg Co., The 282
Parker-Russell Mining & Mfg.Co. 278
Phillips & McLaren Co........... 279
Potts, C. & A. Co................. 289
Purington Paving Brick Co..... 221
Ricketson's Mineral Paint Wks. 274
Roessler-Hassslacher Chemical Co., The...................... 278
Schurs oil Burner Co...... 274
Shawmut Vitrified Paving Brick Works 220
Standard Dry Kiln Co., The... 224
Steele, J. C. & Sons.............. 210
Stevenson Co., The............ 271
Terre Haute Vitrified Brick Co.. 221
Thwing Instrument Co 280
Tile Underdrainage.............. 220
Toronto Foundry & Mach. Co... 282
Wallace Mfg Co 290
Webster & Kincaid............. 286
Williams, C. K. & Co............ 278

SEE TABLE OF CONTENTS ON PAGE 260.

ORIGINAL Boss SYSTEM **Drying and Burning** ORIGINAL Boss SYSTEM

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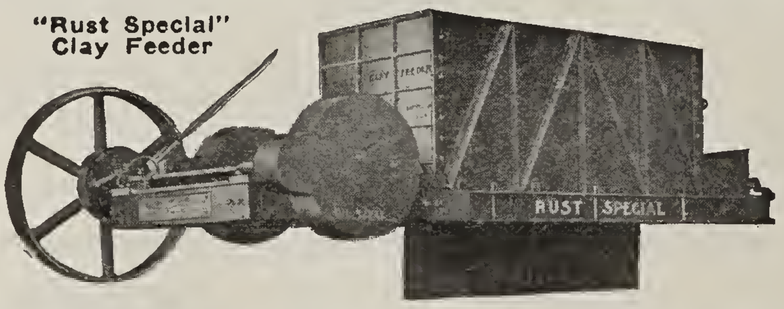

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THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. LXX. INDIANAPOLIS, IND., OCTOBER, 1918. No. 4.

UNCLE SAM'S DORMITORIES

GOVERNMENT HOUSING for the Army of War Workers Now Crowding the National Capital. Temporary Buildings of Hollow Tile Being Erected Under the Direction of the United States Housing Corporation, Washington, D. C.

THE TWO GREAT GOVERNMENT housing operations in Washington—the extensive groups of dormitories on Union Station plaza and those in Potomac Park—represent the greatest use of hollow tile ever attempted in a single enterprise in this country and probably in the world. The buildings are to be surfaced with pebble dash.

Between the Wings of Residence Halls, Union Station Plaza, Washington, D. C.

With the completion in December of the housing project on the area between the Capitol and the Station, commonly known as the Station Plaza, the United States Housing Corporation hopes not only to relieve in a measure the local demand for rooms but also to add buildings to the general scheme of city planning in Washington that will harmonize with other structures in the vicinity. This development is divided into two groups, the Station Plaza and the Capitol Plaza, each deriving its name from the direction it faces.

Two thousand persons will be housed in these two groups. All, of course, will be war workers—persons engaged in various departments of the government. The occupants of the two groups will be located generally in single rooms, and whether or not any of the space will be allotted to men has not been definitely decided. At the present time the demand for rooms for women workers is the greater. This and many similar questions will be answered when the dormitories are nearer completion. The answers will be largely governed by circumstances as they exist at the time of the opening of the dormitories.

At 23d and B streets, however, on the ground owned by the government and bounded on the south by D street, on the north by C street, the east by 21st street, and the west by 23d street, the United States Housing Corporation will have soon under way another development for the housing of 2,800 war workers. Fifteen hundred of these will be accommodated in single rooms and thirteen hundred in small apartments. This work has not been started yet, but will be soon in progress, with completion planned for the earliest date possible, consistent with good construction.

The buildings are of temporary construction. Simple colonial designs have been employed throughout. When the trees and shrubs are placed, lawns in, and the whole development has had time enough to assume in some degree an air of permanency, the district will give the impression of an American city during Crown colony days. This effect will be strengthened by cream tile facing and stucco exterior. Green blinds, white trim and black slate-colored roofs will add contrasting touches.

The designs were made by Waddy B. Wood, of Washington, D. C., in close co-operation with the United States Housing Corporation and the various experts called in by it. The buildings are the result of the best advice that could be offered for this type of construction, supplying this particular need and complying with requirements as to time and appropriation. Experts on hotels, schools, apartment house arrangements, women's welfare work, refrigeration, heating, electricity and sanitation and details including furniture and room decorations, have all been consulted as to these buildings; in fact, this is the policy of the Housing Corporation regarding any construction in hand.

Court View of Womans Residence Halls, Potomac Park Group, Washington, D. C.

In the Station and Capitol grounds, dormitory rooms will be uniformly 8 ft. 3 in. by 11 ft. 5 in., although a small proportion of double rooms will also be provided. Each room will contain one large window, a basin with hot and cold water, one electric light in the ceiling and a base plug for light or fan. The windows will have outside blinds with curtains and shades inside. Each room is to be provided with a large closet, two rugs, an iron bed, two chairs, a bureau and a writing table. Extra clothing may be placed in a utility box to be slid under the bed.

The dormitories will be three stories high and grouped into separate detached buildings, each consisting of two parallel wings. The first and second floor of each two-wing unit will be connected, this connection forming the curve of the letter "U," the parallel wings making the sides. The connection on the first floor, or the curve of the "U," is to be devoted to entrance, lobby and sitting rooms for occupants and guests. Above this is to be a second floor canvas-covered porch provided with porch furniture. The third floors of the two parallel wings will not be connected. In the basement below is to be storage rooms for trunks, servants' quarters, and a kitchenette and laundry for the women's group. Each hall cares for twenty-five persons, with a toilet, wash-room and shower and tub baths. Six buildings, as described above, are to be used each for a general group. Each group is arranged around a large dining room which will have ample kitchen capacity.

In the dining room and connected to it is the administration center which will contain a large porch and commodious lobby, with writing and sitting rooms and general office nearby. The arrangement will be the same as to be found in a well ordered country club.

Above the administration building in the women's group is to be the auditorium with a seating capacity of approximately 500. It will be equipped with a stage adaptable for theatrical entertainments, lectures or moving picture shows. Dressing rooms will be accessible to the stage. The floor will not be tilted as in a theatre but will be flat so that the hall can be used for community dances and social functions.

In the 23d and B streets group the arrangements for women are similar to the above. There will be space for 1,500 persons in single rooms with dining rooms and administration offices. Around this group and cut off from it are to be the apartment buildings. Each of the buildings is to be three stories high and will contain four apartments on each floor. This will make separate units of twelve apartments each.

The apartments will be standard in size, containing a living room, two double bed rooms, kitchenette and a bath room which will be equipped with shower and usual appliances. The kitchen, in addition to the usual equipment, will contain an ice box, chest of drawers, and an electric range. Space in the basement will be used for maid's quarters, janitors, public laundry and storage. Steam heat will be used throughout the three groups. Each of the groups is to be provided with an infirmary in a separate building, which will contain wards, single rooms, diet kitchen, office, examination room, sterilizer, and porches. These will be under the direction of a competent trained nurse and supervised by visiting physicians of the city. These infirmaries will be capable of caring for twenty patients. ALFRED T. MARKS.

Washington, D. C.

AN UP-TO-DATE IOWA BRICK AND TILE PLANT.

The immense new plant of the Smith Brick & Tile Company, at Sheffield, Iowa, which has been under construction nearly all spring and summer is fast nearing completion. The plant has been built throughout with a view of economizing in labor and at the same time maintaining a high state of efficiency in every department. C. L. Smith is the president of the company, and the other officers are George Goppinger, has its entire output contracted for to the government. So in the future employ women in the various departments of was damaged to the extent of $15,000 by fire recently. The burned portion will be rebuilt at once.

RECENT DEVELOPMENTS IN CERAMICS.*

Increased Demand for Silica Brick—Replacement of German Clays—Development of Porcelain and Chemical Stoneware Industries—Success in Optical Glass Manufacture.

By A. V. Bleininger.

ONE OF THE MOST IMPORTANT functions of the ceramic industries is the supply of refractories for the metallurgical operations of the country, steam powerplants, byproduct coke oven, gas plants, glass works, and many other purposes too numerous to enumerate here. The demand for these products has been enormous and has been met by the refractories industries in a very satisfactory manner. Although at times the need of No. 1 fire bricks has been greater than the production, such a condition does not exist at the present time, owing to the expansion of this branch of the industry. In many instances the extraordinary demand was caused in part by the unwillingness of consumers to use anything but No. 1 refractories even for purposes where lower grade products would serve equally well. Fire bricks of the lower refractory grades are available in abundance, especially since a considerable number of face and building brick plants have taken up the production of this type of ware. One of the urgent needs in this connection is the establishment of a classification and specification of the several grades of clay refractories. This task is being undertaken at the present time by the War Industries Board. The work of standardizing the shapes of fire brick has already been accomplished in a satisfactory manner.

Coke Ovens Increase Demand for Silica Brick.

The demand for silica bricks has been greatly increased through the development of the byproduct coke oven. Meeting this demand involves not only large quantity production of these refractories, but high quality as well. It is necessary that the transformation of the quartz to cristobaltic be largely completed as indicated by the lowering of the specific gravity to a value of not more than 2.38 and that the product possess good mechanical strength, corresponding to an average modulus of rupture of about 500 pounds per square inch. These requirements are exacting and may not always be met in bricks made from silica rock other than quartzite. Certain materials, like chert and flint, transform to cristobalite more rapidly than quartzite but do not yield as strong a product. Sandstones usually transform more slowly and likewise tend to give inferior strength.

The manufacture of silica refractories is certain to expand still more, both in the eastern states and in the middle west. If the war continues for any considerable period, additional emergency production in connection with the erection of new coke-oven plants will certainly be necessary.

Difficulties have been met in supplying the basic magnesite refractories from the available American materials. This has been due to the nature of our magnesite, which differs from the Austrian ore in being very low in iron oxide and sometimes higher in lime. This makes it necessary to add the iron synthetically, a procedure which adds to the cost of production, since it requires intimate blending and grinding of the mixture and a higher calcination temperature than is needed with the European raw material. In addition the magnesite must be transported across the continent from California or Washington. The latter state produces at the present time large quantities of magnesite quite low in lime and the quality of the material is of a character which is making it possible to reduce operations to a uniform practice.

It has been found possible also to replace magnesite bricks in certain operations by bauxite refractories. The production of magnesia spinal refractories of the composition $MgO{\cdot}Al_2O_3$ has made a beginning and it is not unlikely that for many purposes it will prove a very desirable material. There has naturally been a shortage of chromite refractories, even though the quantities really needed are small. This has been overcome by the use of thinner partings and in many cases by doing away with this refractory entirely without apparently any serious effects.

Superiority of Ceylon Graphite.

Much has been said on the question of graphite crucibles. The graphite problem is undoubtedly the more important one in this connection. It is a difficult matter to replace Ceylon graphite altogether with the domestic mineral. In the first place the greater density of the imported material, 2.25, which imparts to it the characteristic resistance to oxidation, its foliated structure, and the low ash content of the best grades combine to make it extremely satisfactory for the purpose of crucible making. This graphite can be bonded together with comparatively small amount of clay, since the surface factor per unit weight is smaller than for that of any other kind of graphite.

Albert V. Bleininger, Bureau of Standards, Pittsburgh, Pa.

This point may be illustrated by the volumes occupied by the same weight of several types of graphite. Thus, 100 grams of ground Ceylon graphite after thorough shaking occupies a volume of 90.7 c.c., Canadian graphite 119.6 c.c., and Alabama graphite 152.0 c.c. In other words, it would be impossible to make graphite mixtures of maximum carbon content from the two American materials. Since they offer a much larger surface the amount of clay used must be greater. From this it follows that the ultimate density and thermal conductivity are certain to be lower.

To what extent American flake graphite can be admixed with the Ceylon graphite remains to be seen. The writer has seen mixtures in which the flake added amounted to 20 per cent of the total graphite content and gave fair foundry results. It might be possible, however, to perfect processes which will enable the crucible maker to employ larger percentages of domestic graphite, and at the same time secure practically the same results as with Ceylon graphite. On the other hand, there is no reason why a large quantity of domestic graphite should not be used in the making of stoppers and similar articles. The comparison made between the Ceylon and and flake graphite is, of course, relative, and refers to crucible value obtained per dollar at the present time. If for some reason this country could no longer obtain Ceylon graphite, the production of metal certainly would not be diminished in any way, as we could get along very well with flake and amphorous graphite, furnace carbon, and coke.

---

*By permission of the Director of the Bureau of Standards. Read at the meeting of the American Ceramic Society, New York, September 26, 1918.

German Clays Successfully Replaced.

The lack of the German Klingenberg clay for crucible making is not as serious a matter as has been thought. It has been shown conclusively that it can be replaced both by English and American ball clays.

Similarly, the German Gross Almerode clay used in the making of glass pots has been replaced by American clays and synthetic mixtures in a very satisfactory manner. In fact, it is quite probable that the new techniques now being developed will yield results superior to those formerly obtained with the use of imported clay. The shaking up caused by the war will, in the end, be of distinct service to the glass refractories industry. At the same time, the glass industry will gain in pot service through the realization that the control of the heating up process of the pots in the arches is essential in preventing loss.

Special clay refractories have been developed also with reference to improved thermal insulation, including materials highly refractory, light in weight, and possessed of good insulating qualities. The saving in fuel consumption and weight through the use of such products is bound to be considerable.

Development of Porcelain Industry a National Duty.

The manufacture of hard-fire, true porcelain has received a powerful impetus through the war. Three plants are already operating successfully on the production of chemical porcelain, and are making rapid strides with respect to quality. The manufacture on a large scale of hard porcelain tableware is to be begun in the very near future. It is very fortunate that the pioneers in this work have realized the importance of putting their production on a firm basis with reference to foreign competition. By the use of automatic machinery, mechanical dryers and tunnel kilns, they will be enabled to meet foreign competitors on equal terms. The plants now in course of construction excel all European potteries in the elimination of unnecessary labor cost, and expenditure of fuel. The development of a hard-fire porcelain industry is, indeed, a national duty. It would be preposterous and humiliating to contemplate any further dependence on Germany and Austria for these products. By establishing this industry we shall be in position to seek the South American market to which we have a fair right.

The demand for ordinary tableware at the present time is greater than has ever been known before and difficulty is being experienced in supplying the requirements of the Army and Navy and at the same time those of the country. The simpler shapes such as cups and mugs are now being produced by the one-fire process, which incidentally results in an appreciable saving of fuel.

New Porcelains Show High Electrical Resistance.

Porcelains for special purposes have been developed successfully. Thus, the national Bureau of Standards has introduced the manufacture of the refractory Marquardt porcelain, essentially sillimanite, formerly produced by the Royal Porcelain Manufactory at Berlin and used so largely for pyrometer tubes and similar articles. Likewise, we have succeeded in making porcelains possessing remarkably high electrical resistance at elevated temperatures. Several of the bodies produced in the Pittsburgh laboratory of the Bureau of Standards showed a resistance of one megohm per cubic centimeter at 780 deg. C., and at the same time a coefficient of thermal expansion of only 3.81X10^{6}. per deg. C. between the temperature range of 30 to 400 deg. C.

The same materials showed none of the variations in thermal expansion common to most porcelains, the coefficient remaining practically constant throughout the range of 30 to 520 deg. C. It is evident that such properties, coupled with good mechanical strength, are essential for such uses as aeroplane spark plugs. There is every reason to believe that the principles thus worked out will greatly assist in producing special grades of electrical porcelain for use under severe conditions. These developments have been assisted greatly through the use of the petrographic microscope in the study of porcelain structures.

Further Developments in Porcelain Expected.

The manufacture of electrical porcelain is undergoing improvements at a more rapid rate than ever before in the history of this particular industry. The methods of preparation are more thorough, the details of shaping are being studied more carefully, the drying process is being controlled with greater accuracy, and the methods of testing developed toward more exact differentiation as to quality. The casting process is finding application to an increasing extent. Further developments are to be expected with reference to the composition and firing of electrical porcelain, based on more recent studies on the subject of the function of feldspar as an electrolyte and the volume changes induced by the transformation of quartz to its several crystalline modifications.

Considerable work is being done also with regard to the complete survey of the resources of the country in kaolins and ball clays for use in the ceramic and paper industries, through the agencies of the Association of State Geologists, the Bureau of Mines, the U. S. Geological Survey, the American Ceramic Society, and the Bureau of Standards. It is believed that this survey will enable us to take stock of our resources with the final object of making ourselves independent of any foreign sources. A considerable number of new clay deposits have been located within the past two years, to say nothing of glass, sand and other ceramic raw materials.

Chemical Stoneware Industry of Vital Importance.

One of the clay industries vital in the prosecution of the war is the manufacture of chemical stoneware. The production of this type of ware requires particular skill, owing to the complicated designs, large size and the necessity of the tight fitting of the pieces. But few realize the magnitude of the task which confronted this industry, especially when handicapped by shortage in labor, fuel and other necessities. It is very gratifying, indeed, to be able to say that the stoneware manufacturers have met the situation so well and have been able to supply the needs of the chemical industries. This statement applies equally to the manufacturers of acid-proof, enameled cast-iron and sheet steel products which have played an important role in recent chemical developments.

Another industry having a direct bearing upon war work is that engaged in the manufacture of abrasives and grinding wheels. The rapid growth of this branch of manufacture and its technical development are characteristic of America. Its work has been done with such quiet efficiency and it has met the demands of the present conditions so promptly that but few realize the magnitude and importance of its accomplishments. Research has played a large part in this development and to the utilization of scientific facts we owe the highly specialized grinding tools made available for large production, as well as for the most delicate processes, such as the grinding of optical lenses.

The industries engaged in the production of ceramic structural materials have naturally been hard hit by the decrease in building activities and by the fuel orders. The manufacturers of building bricks, hollow tiles, sewer pipe, paving bricks, terra cotta, floor and wall tile, etc., are endeavoring to hold together their organizations. In districts where war activity prevails the plants are operating to capacity; in others new branches of manufacture have been taken up, such as the production of refractories, crucibles, and certain specialties for war use. But even under such conditions interesting developments are taking place. Much attention is being given to the question of fuel economy through more rapid firing and the utilization of waste heat. New applications of clay are being found such as the use of crushed vesicular vitrified brick material as an aggregate for concrete, having the advantage of light weight, low thermal conductivity, and constancy of volume when heated.

Optical, Signal and Chemical Glassware.

With reference to the glass industry the three most interesting developments are those relating to the optical, colored (signal), and the resistant or chemical glasses. When it is realized that at the beginning of the war but little optical glass was being produced in the United States, the rapid development of the art presents an inspiring example. The necessity of war brought together the manufacturers on the one hand and scientific and technical organizations like the Geophysical Laboratory of the Carnegie Institute and the Bureau of Standards on the other.

Although some of the manufacturers had brought their furnace practice to a very satisfactory state it was not realized fully that the raw materials must be practically free from iron, sulphur, chlorine, and other impurities. Likewise, methods for the rapid examination of the glass were lacking so the frequently poor glass was brought to the grinding and polishing rooms of the optical shops; very often, too, good product was by chance rejected. The necessity of temperature measurement and control was not fully realized and the method of stirring had not been brought to a satisfactory development. At the same time the commercial glass pots were the source of much grief due to their high iron content, which discolored the glass in the absence of decolorizers which are not allowable and their failure to resist the corrosive action of the flint and barium glasses. These things have been overcome to a very large extent.

Rapid Progress in Producing Good Glass.

Through the use of sand of great purity and constant checking of the composition of the other constituents, the primary difficulties have been removed. The composition of the glasses has been correlated with the optical properties, the index of refraction, the dispersion value, and the light absorption. Time-temperature schedules have been worked out for the melting and cooling periods and satisfactory stirring machines designed. Rapid inspection even of the glass in lump form is now possible by the use of immersion methods and examination with mono-chromatic light in addition to the examination through the polished edges of blocks.

The pot problem has been solved through the use of white burning clays like the kaolins and even more satisfactorily by the production of semi or true porcelain pots. Containers of the latter type are now being made in several works and have proved eminently useful. In fact, it has been possible to melt in such pots dense barium crown glasses which have proved exceedingly destructive to the ordinary types of refractory materials.

Essentials of Optical Glass Manufacture Mastered.

workers, and some interesting information has already been obtained. It might be said then that in the United States we

The annealing process is being studied by a number of have mastered the essentials of the production of optical glass, and about seven types are being manufactured commercially. Problems dealing with the cutting down of the losses and certain optical phenomena, etc., of course, still remain; it is to be expected that continued progress will be made in this art.

It is a source of pleasure to note also the fact that scientific and technical researches dealing with the technology of silicates are being continued at the present time, even though they have more or less bearing upon conditions brought about by the war. We are mastering more and more the control of the class of dispersed systems represented by clays floated in water, their drying behavior, and the changes which they undergo upon vitrification and fusion by resorting to the methods of the scientific investigator.

In this brief survey it has not been possible to emphasize some of the more important technical advances, nor was it permissible at this time to dwell upon certain developments, such as a new role played by clay in chemistry, but it is hoped that this hasty contribution might afford some conception as to the activities in the ceramic industries.

NEW YORK AND VICINITY.

Prices for Hudson River common brick are quoted at $14, with perhaps some concessions, in case a purchaser is in position to take any considerable quantity. Movement is much restricted, of course, and few are in position to do anything at all. The Garner Brick Works, at Nyack, is a case in point. It hasn't made a brick this season, and a great many others along the Hudson river have followed this example. There is no business of any sort at present, excepting deliveries on contracts made a long time ago. No contracts are made and building operations in New York are at the lowest ebb they have been in years.

It is true that a good many permits are filed, but nothing is done upon them. Here and there structural work is in progress, but it is generally work which was arranged for before the war shut off all business. Losses would be greater to discontinue work than they are to continue. But all are looking forward to the coming of a better day, and then New York will develop as it never has before. Many consider that it is now under-built and that a great many new structures of all classes will be required to care for the growth now in progress.

Meanwhile examination of any part of New York will clearly prove what an important feature brick is in its structural development. Without it the city could hardly have developed to its present size, nor could its great buildings have been erected. And brick and burned clay in different forms will be the principal material in the years to come. More ornamental, perhaps, as the efforts of architects to improve the artistic appearance of brick buildings, but assuredly none the less in quantity.

With this prospect ahead, perhaps, the burned clay industry can accept its present unfortunate condition as only temporary and presaging such a return of prosperity as it has never before known, and proceed to prepare for the coming of that vastly better day of the future. BURTON.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXX.

DOWN-DRAFT PERIODIC KILN.

THE DOWN-DRAFT kiln is the type of kiln most widely used and in it are burned the greatest variety of products—common bricks, face bricks, fire bricks, paving blocks, drain tile, and fire-proofing, salt glazed conduits, sewer pipe, and building blocks, stoneware, terra cotta in some degree, and the smaller lines of special ware.

A few years ago it was a simple matter for an engineer to select the proper kiln principle for any industry, and his chief problem was to adapt the type selected to the particular industry. Today his biggest problem is to determine the type of kiln.

Machine setting demands an open top kiln, and if the open top continuous kiln, with its economy in fuel and sanitariness, can be developed to give the better results required by critical markets, the down-draft kiln must largely abandon the common brick field.

The higher types of continuous kilns are steadily invading the pre-eminent field of the down-draft kiln. The down-draft kilns, however, will never be abandoned, but instead will be further developed and specialized to fill a very important place in the ceramic industries.

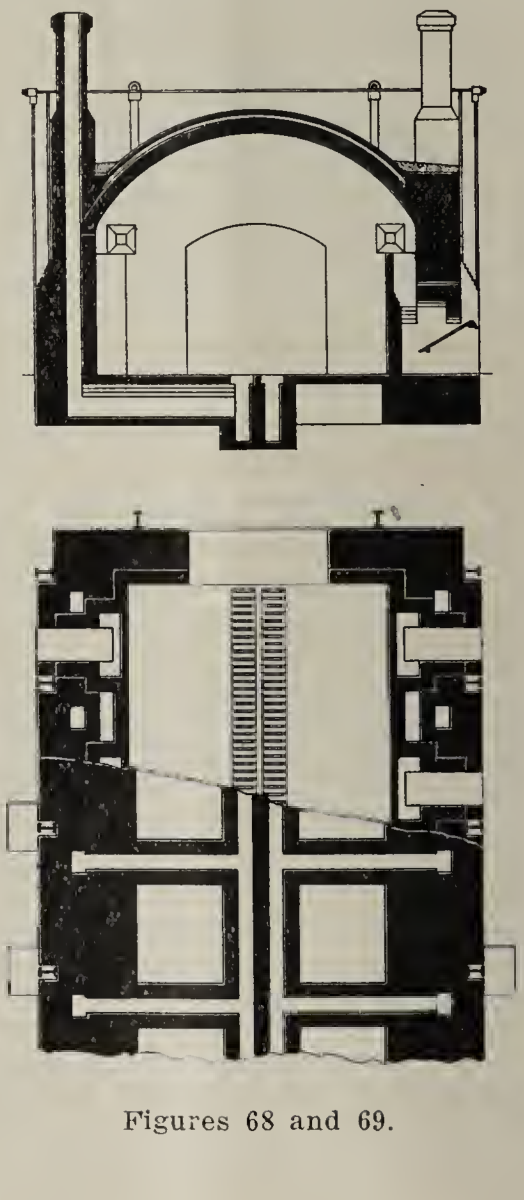
Rectangular Down-Draft Kilns.

The rectangular kiln has a possible larger capacity than the round kiln and permits a better yard arrangement. Kilns have been built 150 feet long holding approximately 300,000 standard size bricks. The further advantage of a rectangular kiln are: the uniform setting from end to end, and wide doorways permitting double tracks in consequence of which the setting crew is not delayed by switching cars in and out, or wagons can be backed in to the working face.

Multiple Stack Kilns.

The difficulty in working out a plan for a long kiln is in getting an equal draft distribution, and this, in the early development of large capacity kilns, led to the adoption of multiple kiln wall stacks, as illustrated in Fig. 68 (cross section) and Fig. 69 (plan). The objection to the wall stack is that it weakens the kiln wall, and the expansion distorts the stacks, frequently partially closing them and thus in a measure defeating the purpose of the multiple stack in that if the stacks are not alike the intensity of the draft will vary. A feature of the wall stack is that the stacks will become heated up early in the burning process, thus increasing the draft for the water-smoking and oxidation when strong draft is needed and frequently not available in outside stacks. It is also claimed that the wall stacks keep the side walls hot throughout the burn and that we derive some benefit from the heat in the waste gases. This claim may be questioned. After the gases have been drawn from the kiln bottom, the chances are that the temperature increases in their passage through the wall stack and instead of giving up waste heat to the kiln they draw heat away from it.

The plan shows a double row of perforated floor bricks in the longitudinal center of the kiln, but the floor can easily be made full perforated or perforated at intervals across the floor as may be desired. There is a difference of opinion in



Figures 68 and 69.

regard to the floor arrangement. For hollow ware the floor should be fully perforated with very small slots, but for bricks the semi-solid floor is considered the best. We found that with a fully perforated floor that we got better results after the under flues were filled with sand except over the center flue, and this led to the use of the plan as shown in Fig. 69. Some engineers hold that it is best to have a complete circulation of the waste gases under the floor, and this is our opinion, and the plan shown can be arranged for such complete circulation.

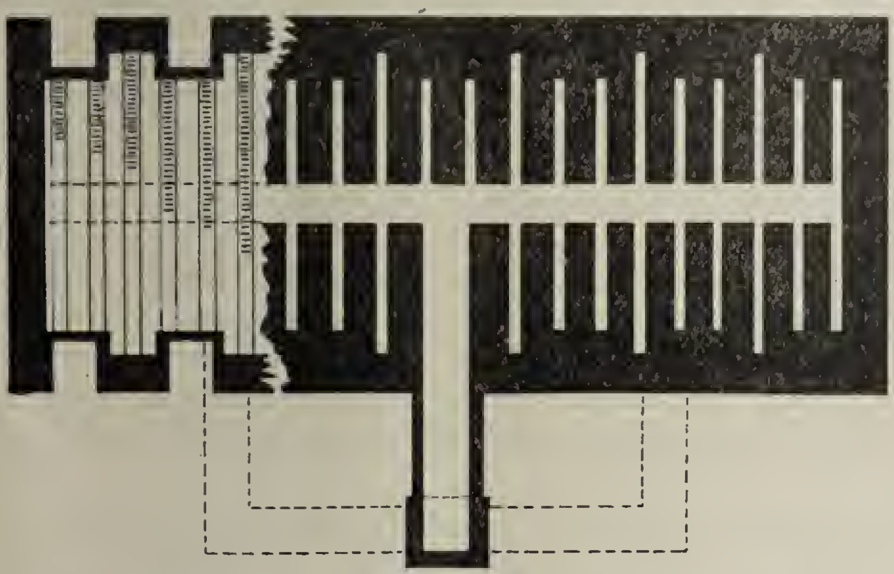


Figure 70.

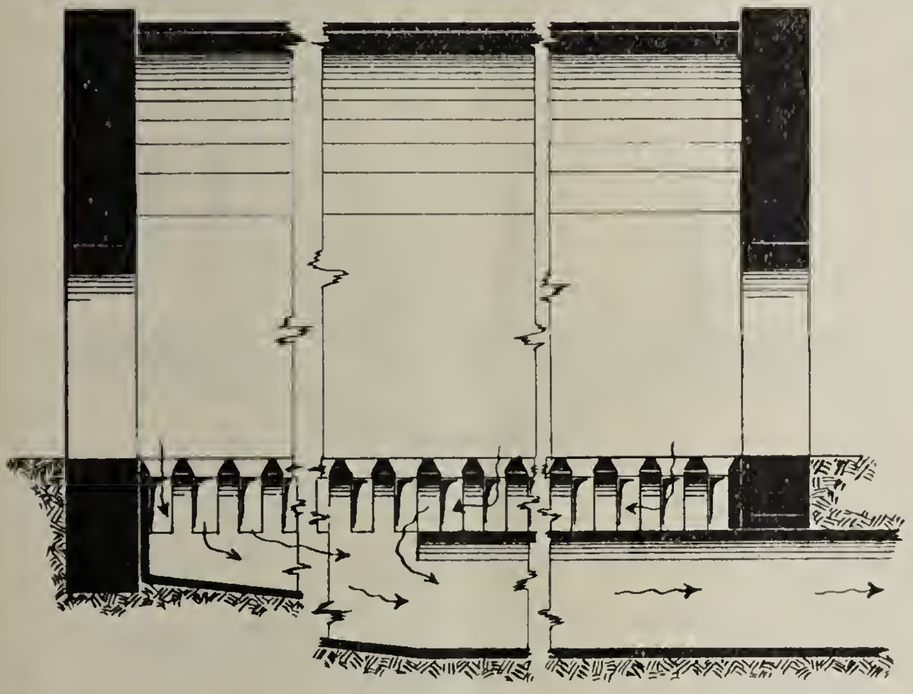


Figure 71.

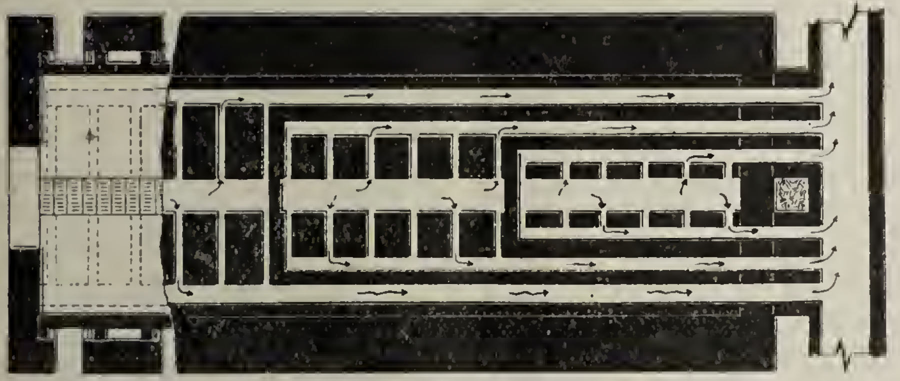


Figure 72.

The several floor arrangements above suggested have been tried out in actual practice, and each has its advocates.

The Laubacher rectangular kiln shown in Fig. 69 and Fig. 70 has a solid floor with outlets at intervals, and there is complete circulation under the floor. The main draft flue leading to the individual stacks is under the main kiln wall. The furnaces are the inclined grate bar type and the hot coals and ashes rest upon the arch of the draft flue, the crown of which is only four inches thick. The effect of this is to heat up the draft flue almost at the beginning of the firing thus giving stronger draft in the early stages of the burning, as well as throughout the burns.

The Dennis kiln is a multiple stack kiln, unique in that it is, practically, two kilns in one.

Two distinct compartments are built side by side and connected. The stacks are in the wall between the two compartments, and the furnaces are in the outside walls on either side.

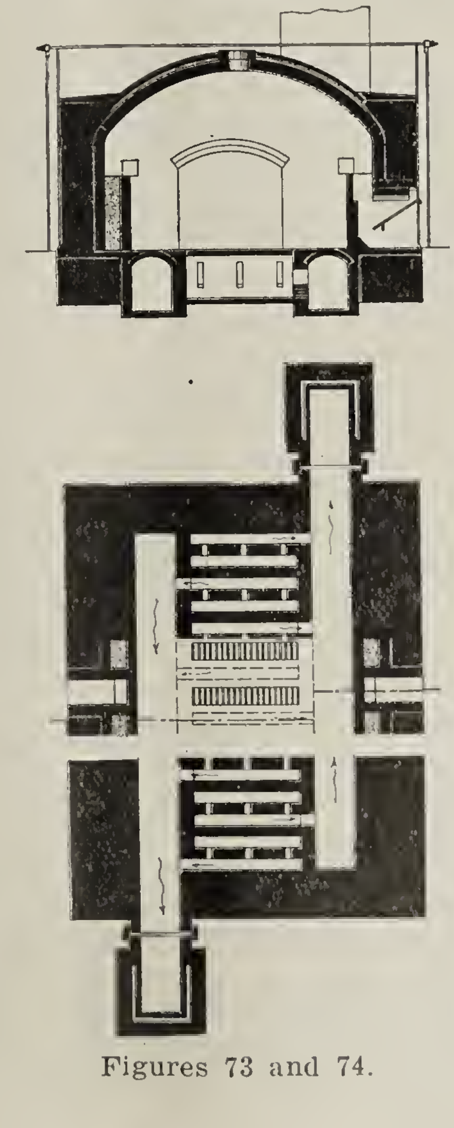
The Yates kiln carries the wall stacks up over the crown from each side to the center, terminating in a series of stacks. Since the crown is the part of the kiln to become heated up first, it would conduct this heat to the stack flues resting on the crown and thus develop a strong draft early in the burning process, particularly in the last stages of the water-smoking and in the oxidation period.

Rectangular Kilns with Outside Stacks.

The biggest problem in designing rectangular kilns with outside stacks has been to get an equal draft in all parts of the kiln.

Kilns of limited length have been built with a central longitudinal flue in the kiln bottom with a cross flue leading to the stack as shown in Fig. 70, and one double stack would serve two kilns. The draft in such kilns is weak at the ends, where even with uniform draft we have difficulty in maintaining the temperature. Double cross flues as shown by the dotted lines in Fig. 70 also are used and these divide the kiln into three sections. The several under floor outlets into the main longitudinal flue are, or should be, adjusted in size to give a theoretically uniform draft from the stack cross flue to the most distant points in the main kiln flue. It is, however, impossible to adjust the sizes of these outlets to get an accurate distribution of the draft, but any proper adjustment helps.

Kilns of these types are doing good work in the hands


Figures 73 and 74.

of competent burners who appreciate the importance of keeping the end fires in better condition to offset the weaker draft. Too frequently, however, the burner gives each furnace the same treatment in firing and clinkering and expects the kiln to overcome his shortcomings. If it does not the fault lies with the kiln.

Many plants are laid out with the stacks at the ends of the kilns, or a large single stack, or fan, for kiln control through the ends of the kilns.

Sometimes the kilns have a single flue through the center of the kiln longitudinally and the draft is all from one end. That such a plan is decidedly bad needs no argument. Simplicity in kiln design is desirable but such a plan sacrifices results for simplicity. A diaphragm in the kiln flue as shown in Fig. 71, serves to divert the draft from the end toward, or to, the center and gives a center draft as in the preceding kiln with stack at the side.

A better end draft worked out by Richardson is shown in Fig. 72. The kiln has two central flues with perforated floor as shown in Fig. 69, and these are divided into three sections. These sections on each side are controlled by blind draft flues extending beyond the kiln wall to the stack or fan flue, and each draft flue has a damper control just outside the kiln wall. Short blind flues connect the kiln perforated floor flues with the draft flues. The kiln floor is solid except over the central kiln flues, similar to Fig. 69. This arrangement gives individual control over six sections of the kiln area, and there is full circulation of the kiln gases under the solid floor.

A balanced draft kiln with a stack at each end is illustrated in Fig. 73 and Fig. 74. The feature of the kiln is the two main under floor draft flues in front of the bag walls. These connect at their opposite ends with their respective stacks. Alternating blind cross collecting flues extend across the kiln from the draft flue, and these connect with parallel perforated floor flues. The collecting flue outlets into the draft flues are graduated in size from the stacks to the opposite ends of the kilns to give a theoretically even draft from end to end of the kiln, in so far as is possible. Uniform draft, however, is not dependent upon this graduation in the collecting flue outlets. Assume that, in spite of the graduations, the draft is strongest from a collecting flue at the end of the kiln nearest the stack. The weakest draft then will be from the alternate collecting flue into the opposite draft flue, since it is the greatest distance from its stack. We have then the extreme end of the kiln controlled by the weakest and strongest draft in adjacent collecting flues, and the opposite end has a like control. As we advance from one end to the other, the strong drafts on one side are becoming weaker, and the weak drafts on the opposite side becoming stronger. The aim of the design is to have the drafts equal throughout but whether this is accomplished or not, the sums of the draft from adjacent pairs of collecting flues are equal from end to end. As an illustration, represent the strong draft in the collecting cross flue at one end of the kiln by 10 and the weak draft in the adjacent collecting cross flue to the opposite side by 2, then the draft from the next collecting flue on the strong side may be 9 and the the weak draft on the opposite side 3. The draft from the next pair will be 8 and 4, then 7 and 5, etc., the sum in every instance being 12.

One might think that the strong draft would pull from the weak, in other words, an up-draft through the weak, and a down-draft through the strong. This, of course, is impossible, because, no matter how weak the draft from any collecting flue may be it has a big stack developing it and the strong draft flue will satisfy itself from the non-resisting gases coming from the furnaces. The strong draft flue will get the largest volume of the furnace gases, but as it approaches its limit capacity the weak draft flue will begin to get its share.

The collecting flues are spaced 36 inches on centers, so that the maximum distance from one strong draft flue, if there be such, to the next flue on the same side is 6 feet and midway between is a weak draft flue getting some of the gases.

The plan shown in Fig. 74 has been modified in several ways. The collecting flues may have a perforated floor, thus eliminating the adjacent connected perforated floor flue, and getting thereby a simpler bottom. The perforated floor collecting flues may be spaced 1§ inches on centers, thus getting a perforated floor for hollow-ware—fully perforated by lowering the draft flues and extending the floor flues to the bag wall—or they may be spaced to correspond with a three brick bench which is common practice in floors for brick setting.

Instead of the perforated floor flues across the kiln, we may have the longitudinal perforated floor flues as shown in Fig. 69 by simply introducing the main draft flues with their corresponding stacks.

Features in the Construction of Rectangular Kilns.

Prof. C. B. Harrop's article on "Kiln Expansion and Bracing," read before the National Brick Manufacturers' Association and published in the Transactions and also in pamphlet form, should be in the files of every clayworker for ready reference and use in constructing kilns, and if his instructions are followed, the bulged kilns which he illustrates will be less in evidence in clayworking factories.

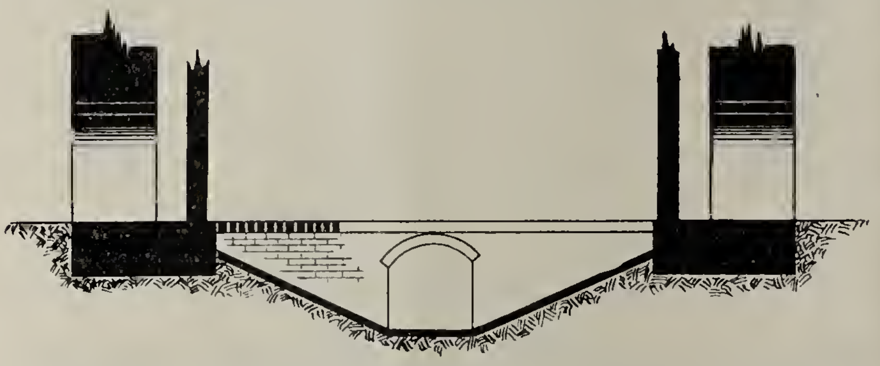


Figure 75.

In designing a kiln one should have in mind that everything entering into the construction will expand except the fire clay mortar and under burned fire bricks, and further that no restraint short of crushing the materials will prevent the expansion. Provision for expansion should be a kiln draftsman's slogan. The main walls of a continuous kiln are usually built solid, and if we do not provide for expansion the end walls will be crowded out and cracked resulting in excessive leakage. The best method of reducing this difficulty is by using a heavy vertical joint in the fire brick work. As the bricks expand the mortar joint shrinks, and thus we control the expansion locally and avoid the accumulated effects, at least for a long period of operation.

Division walls should not be bonded into main walls but instead should be recessed into the main wall with a space for expansion at the end of the division walls. In one instance the end walls were thick and battered and the side walls were recessed into the end walls.

Long flue and feather walls may have an occasional lapped or toothed joint with expansion space to take up any expansion not controlled by the mortar joint. It is very important that the expansion of long flues or walls connected with cross feather walls be controlled locally, otherwise the creeping of the flue will carry the feather walls which must in consequence be frequently replaced.

(Continued on page 360.)

Written for The Clay-Worker.

PACIFIC COAST NEWS.

The BRICK BUSINESS, along with other industries and trades associated with building, is now strictly on a war basis. The California State Council of Defense has now been given charge of the building situation by the Federal authorities, with instructions to hold up all non-essential construction until after the close of the war. L. E. W. Pioda, of this city, has been placed in charge of the "Department of Non-Construction," and has already begun to check up operations. A bulletin has been sent out to the county committees to arrange for a survey of all buildings under construction and to report concerning the necessity of their completion, or the possibility of deferring completion until after the close of the war. Sworn applications are to be made either for the completion of work under way or for the starting of new work.

This latest development had already been largely anticipated and its results discounted by an agreement recently made between the priorities division of the War Industries Board and the clayworking interests of this section associated with the Brick Manufacturers' Association, the plans and purposes of which are best explained in the following circular letter just sent out to the distributing trade by the manufacturers:

"We have signed pledges with the priorities division of the War Industries Board which oblige us to sell our products for such uses only as will contribute to the winning of the war. It becomes necessary under these pledges to convince ourselves that all our materials are to be used in this manner. No building is considered necessary for the winning of the war until it has been cleared by the building materials section of the War Industries Board. Consequently, it will be necessary for every building project to obtain this clearance before any order can be accepted or delivery commenced. Buildings on which actual work has commenced and on which the brick work can be completed within two weeks after the receipt of a pledge may continue to get delivery, but for all work which does not classify as above, delivery will be stopped unless the required clearance can be secured. This is not to be construed as preventing the sale of small quantities of materials for repairs or for extensions of existing structures involving an aggregate cost of not more than $2,500.

(Signed) "McNear Brick Company,
"Port Costa Brick Works,
"Sacramento Transportation Company,
"Peterson-Kartschoke Brick Company,
"San Jose Brick Company,
"Remillard Brick Company."

J. T. Roberts, president of the Stockton Fire and Enamel Brick Company, of San Francisco and Stockton, is one of the captains in the present Fourth Liberty Loan drive, and he is spending practically all of his time getting about his district and supervising the gathering in of the bond subscriptions.

Good progress is reported in the reconstruction work on the plant of Gladding, McBean & Co., at Lincoln, Cal., recently partially destroyed by fire.

The old struggle between the Pacific Sewer Pipe Company, manufacturers of clay pipe, and the California Glazed Cement Pipe Company, both of Los Angeles, for the privilege of supplying sewer pipe for that city, has been renewed. Some months ago the cement pipe people appeared to have won a victory when the city council specifications enable the cement pipe makers to put their output on the market at figures which the clay pipe people could not touch. Now, however, the matter is up again before a special committee of the council. President E. M. Durant, of the Pacific Sewer Pipe Company, charges discrimination against clay pipe, and is making an effort to have the specifications changed.

T. E. Ahlstrom, a gold mining man of Siskiyou county, in northern California, has discovered near Gottville, in that county, a large deposit of potter's clay, which he believes will prove of great value. He has brought samples of the deposit to Yreka, and will have tests made, with the idea of working the deposit if it proves to be as good as he anticipates.

Owing to the extensive manufacturing capacity of the brick manufacturing plants of Los Angeles, Cal., to an accumulation of some 20,000,000 brick and to the comparatively light demand for building brick in Southern California, it has been estimated that something like 20 per cent. of the capacity of the Los Angeles brickyards has been shut down. Now, however, it appears that a considerable portion of this clayworking capacity will be employed in making building tile for the United States Government. In order to conserve both lumber and railway shipping space the Government has decided to use clay building tile from Southern California rather than continue the use of Oregon and Washington lumber in the erection of cantonments in Arizona. A big order for tile has been placed, and it is understood that at least five of the brickmaking plants of Los Angeles will be transformed into tilemaking plants to help fill the order in quick time.

On November 26 the Mercantile Trust Company, of San Francisco, will sell at auction, for the benefit of the bondholders, the brickmaking plant and other properties of the Vallejo Brick and Tile Company, of San Francisco and Vallejo, Cal.

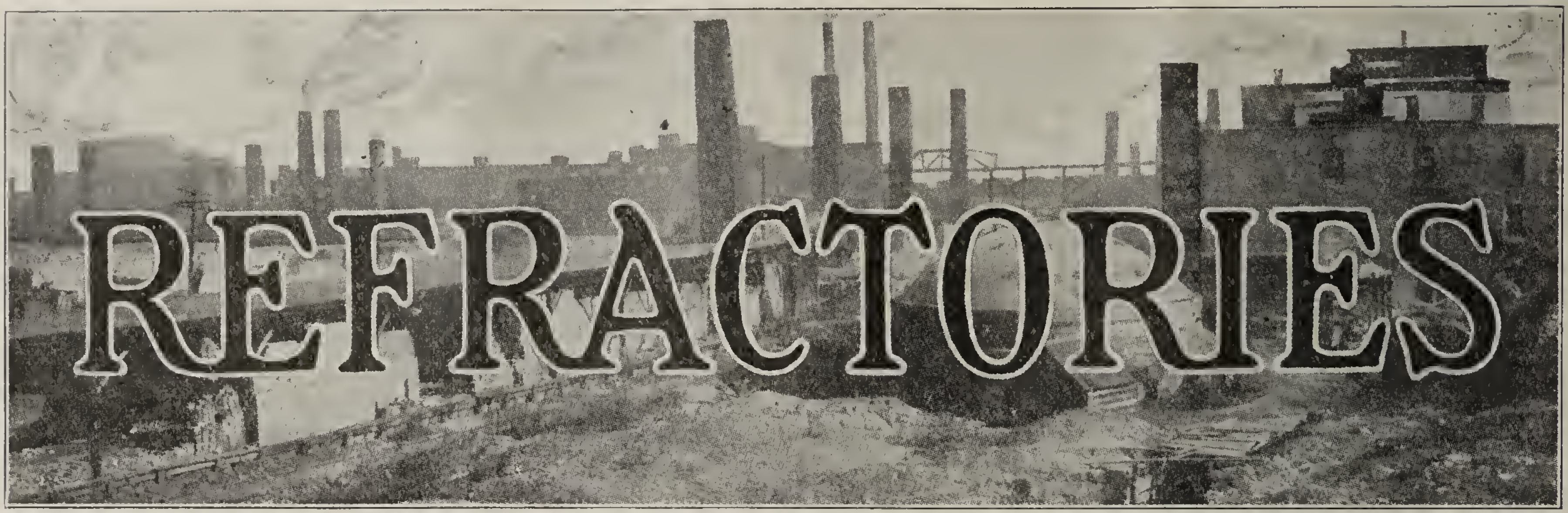
The Illinois-Pacific Glass Company, of San Francisco, which some time ago secured control of the clayworking plant of the Theo. Dittell Company, with works at Antioch, Cal., is reported to be making a considerable success in the washing of clay, from which is secured valuable kaolin, as well as a large amount of glass sand for the use of the owning company's glass plant in San Francisco. The clay is brought to Antioch from extensive deposits in Plumas county, California, and is washed by a method adapted from California gold ore crushing and washing and put into practice by P. D. Burt, a mining engineer, and only incidentally a clayworker. The kaolin is partly consumed in the manufacture of porcelain at Richmond, Cal., and partly by chinaware plants at Los Angeles.

The Pacific Sewer Pipe Company, of Los Angeles, Cal., which has an extensive plant at the neighboring town of Los Nietos, appears to have been the victim last week of a made-in-Germany strike among its Mexican employes, which constitute the bulk of the force. Two recent arrivals from Mexico, who were shown to have German sympathies, if not actually in German employ, were proved to have caused the trouble, and when the situation was made clear to the strikers the trouble was easily adjusted and the men returned to work, minus the propagandists.

San Francisco, Oct. 6, 1918. SUNSET.

A UNIVERSAL MILEAGE TICKET.

One of the good things coming out of the railway administration is in the form of a universal railway mileage scrip at the basic rate of three cents a mile. The scrip will be good for both railway fare and sleeper berth, for dining car service and for excess baggage charges on all roads under government control. The war tax will be collected by conductors at the time of paying any fare. This will not only be an advantage to the traveling public, but it will do much to relieve detail and congestion at ticket offices.



REFRACTORIES

Standard Tests of Refractory Materials.

CONSIDERABLE WORK has been done by the Bureau of Standards, The Refractory Manufacturers' Association and the American Gas Institute in compiling data on various tests on refractory materials. The result of this will be a set of standard specifications for refractory materials that should be of value.

The load test, as worked out by Bleininger and Brown, has been and always will be of great value, as it is a positive test. Any tests where the material is heated to a high working temperature and held without load and the quality determined by the shrinkage or expansion of the material, are not positive and their value is relative. However, the relation has been determined from data gathered from many hundred tests, therefore, can be considered of real use.

The beauty of a test of this sort is that it can be made in many laboratories and experiment stations where a load test kiln is not available but where they have furnaces and pyrometer equipment.

Any tests brought out will of course be tentative but it is hoped that the tests will be based on data gathered from the results of enough work to make them sufficiently valuable for permanent adoption as soon as they are thoroughly tried out.

Protect Your Fire Brick.

Fire brick, when in use, in nearly all cases start to fail on the surfaces which are subjected to the most severe heat treatment. These surfaces will gradually corrode, wear away or melt, depending on the character of the treatment they receive, until they are so thin that they must be torn out and replaced. With few exceptions, as long as the surface is kept in good condition, the brick will remain in good condition.

This can be done and is being done in a great many places by coating the surface of the brick with a refractory protecting skin or wash.

This coating should be made of materials at least as refractory as the brick but preferably of better quality material and should be applied as often as is necessary to maintain a good surface. The thicker the coat the better, provided it fits the brick properly and does not check, so as to allow the heat to penetrate to the actual surface of the brick. The material may be applied by several methods, the most satisfactory probably being that of spraying with a cement gun or something similar. This method makes it possible to apply a coat more uniformly and with less chance of its cracking (crazing) while drying on than if applied with a brush. When a brush is used the coat should be put on in thin layers and sufficient time allowed between coats for the excess water to be absorbed into the brick.

The composition of the wash is of vital importance and considerable experimenting should be done to get a good one. In general a mixture of about 60 per cent of ground grog, 30 per cent of refractory kaolin or short fire clay and 10 per cent of plastic clay like ball clay or bond clay should be used. If the mixture is ground too fine it will check easily but it should be fine enough to make a good uniform coat. All material that will pass a 60-mesh screen should be all right.

By making this coating white it will help in making another saving. Part of the heat from the flame will be reflected back into the chamber instead of being absorbed into the fire brick walls and radiated away and lost. This applies particularly to boilers and kilns. It is hoped that actual data on this saving will be available in the near future.

The white materials are easy to secure and are not much more expensive than buff burning materials. One big source of white grog is the waste biscuit ware from white ware potteries and it can be secured at a reasonable price. The kaolins and light burning ball clays can also be secured from pottery clay dealers at a price which makes it worth while.

We are familiar with several instances where kilns, in bad repair, have been brought into first class condition by repeatedly applying coats of this refractory wash until the walls were brought back to their proper thickness. If these kilns had been coated when they were new, and kept coated, they would have been in much better condition. With refractory materials selling at the prices they are at present, it is well worth everyone's while to seriously consider the use of coats of this sort where it is possible to use them. This is particularly true for kilns. where it is possible to get at the parts that are wearing away and coat them just after being drawn.

R. E. F.

Patriotism and Paste.

A very young and inexperienced housekeeper decided to do her bit by papering the house, thus giving hubby a nice surprise, and eliminating the expense of hiring a professional paper hanger.

When hubby came home, however, the surprise which greeted him consisted of yards of soaked, crumpled and torn wall paper, wet, smeary walls and ceiilng, and a tearful, despondent wife.

"I patted and smoothed and pounded, but it would not stick," she sobbed.

"Did you follow the printed directions for making the paste?" asked the practical husband.

"Yes," she vowed, "just exactly; only, of course," she added, while her eyes shone with pride and patriotism, "where it called for flour I used half corn meal."

AMERICAN CERAMIC SOCIETY HOLDS SUCCESSFUL MEETING DURING CHEMICAL EXPOSITION.

THE CHIEF FEATURE of the Chemical Exposition at the Grand Central Palace in New York City the last week in September so far as the clayworkers of the country are concerned, was the meeting of the American Ceramic Society which occupied Thursday, afternoon and evening, during which time subjects of interest and value to the trade were discussed and a number of motion pictures were shown depicting the varying stages in the manufacture of ceramic ware. The sessions were marked by a large attendance and close attention to all of the papers and discussions, which, by the way, always characterize all sessions of the American Ceramic Society.

The booth of the American Ceramic Society was the center of attraction during the day. A large chart which occupied a prominent place in the booth, gave the value of ceramics as $450,000,000 a year, a sum exceeded only by cotton goods. men's clothing and the chemical industries, among manufacturers; by soft coal among minerals, and by wheat, corn, hay, cotton and oats among agricultural products. The varied output of the ceramic industry, as shown by the chart, includes building, face and paving brick, terra cotta, hollow tile, art pottery, white tableware, porcelain tableware, insulation, cooking ware, refractories, fire brick, electrical and chemical porcelain, roofing tile, floor tile, wall tile, glass pots, glass blocks, crucibles, retorts, sanitary ware, chemical stone ware, sewer pipe, drain tile, conduits, spark plugs, etc. This list includes clay products alone. Quite as many more are made of glass and some of the abrasives; some of the plasters and a few miscellaneous items such as talcs, ochres, barytes, pumice, rouge, sand, quartz glass and infusorial earth.

How essential most of these articles are can best be understood by withdrawing them from the average household. Ceramics are more or less essential to the following important industries: Paints, agriculture, steam power, electric power, glass, gas engines, all building metallurgy, analytical chemistry, acids, alkalies, gas, tar, coal, explosives, organic products inorganic salts, electro-chemical products, petroleum products, asphalt, bitumen, sewerage, paper making, cellulose, fats, oils, soaps, sugar, starch, flour, cement, glue, rubber, and many others. Clearly ceramics plays a very important part in the industrial activities of the country.

Since the beginning of the war ceramic products have taken a place in the front ranks of essentials, the list including new refractories for destroyers and other war ships, spark plugs for aeroplanes, electrical porcelains, laboratory porcelains, and glass products, such as telescopes and binoculars, and on up to search light reflectors. In truth, ceramics can well be placed among war necessities.

The afternoon session was presided over by L. E. Barringer who wasted but little time on preliminaries. After a brief talk, welcoming the members, he read a paper describing the Manufacture of Porcelain, illustrating same with motion pictures. In the paper, he emphasized the importance of this branch of the industry and cited instances of how it is helping win the war. The same picture, three reels long was shown again during the evening program.

Albert V. Bleininger, of the U. S. Bureau of Standards, Pittsburg read a paper on "Recent Developments in the Ceramic Industries," which is given in full in another column.

The next paper on the afternoon program was by F. A. Whitaker on "The Manufacture of Stoneware" which was illustrated by stereoptican views, and proved most interesting.

J. B. Shaw of the New York State University, Alfred, N. Y., presented a highly technical paper on "Fuel Conservation", in which he pointed out how fuel can be saved in all the ceramic industries. This was followed by a paper by Heinrich Reis, of Ithaca, N. Y.

The last paper on the afternoon program was "Carborundum Refractories" by S. C. Linbarger.

The evening session was given over almost entirely to moving pictures which included "Glass Making", furnished by the Corning Glass Company, Corning, N. Y.; "The Making of Cut Glass" and "The Making of Pottery" furnished by the Ford Motor Company; and "The Manufacture of Electrical Porcelain," furnished by the General Electric Company.

AMERICAN PEAT SOCIETY.

The American Peat Society held its annual meeting at the Hotel McAlpin, New York, September 25, 26 and 27. The meeting opened at 10 o'clock on September 25, with a good attendance. Professor Homer C. Thompson read an elaborate paper upon "Variations in Productivity of Peat Soils" and included suggestions for improving their agricultural value.

Professor Clarence C. Osbon discussed "Peat Possibilities from the Government Viewpoint," and in this paper something was said about its value as fuel and suggestions were made for utilizing it more extensively than has ever been done before for that purpose. The vital necessity for increasing the fuel supply makes peat of more value than ever before, and has increased the interest in the great deposits which exist in different parts of this country.

The business meeting was held the morning of September 26, when all the routine matters were disposed of. In the afternoon Professor W. R. Beattie read a paper upon the "Economic Value of Peat (or Humus) Soils for Raising Produce."

All day September 27 was devoted to attending the Chemical Exposition. The annual subscription dinner was the evening of September 26.

THE EMPLOYER AND THE CRIPPLED SOLDIER.

The American Red Cross Institute for Crippled and disabled men, 311 Fourth Ave., New York City, has issued a special circular on the duty of the employer on the reconstruction of the soldier, which might well be read and studied by every employer in the country.

Much has been said and written about caring for and providing employment for the men who have gone abroad to serve their country, especially those of them who come home physically disabled, and much more will perhaps be said and written. Also much of it will be more commendable for the sentiment than for the logical sense contained.

The right conception of this matter, which is taken in this circular, is not that of doing an act of charity and providing crippled men with a livelihood as a sort of pension job, but to look thoughtfully after the development of his qualifications to the end that he may be of the greatest value to himself and to industry.

These Red Cross circulars put the matter in a broad, sensible light and those interested in the subject can not do better than apply for as many copies of the circular as they find good use for, and thus get started right in the matter. Copies of the circular and other information may be had by addressing Douglas C. McMurtrie, director, Red Cross Institute for Crippled and Disabled Men, 311 Fourth Ave., New York City.

Abusing the other fellow's product doesn't contribute materially to the progress of the clayworking industry. Tell about the good points of your own and let the other fellow alone unless you can give him a helping hand.

OF INTEREST TO DRAIN TILE MANUFACTURERS

We are pleased to publish herewith an article which should prove most interesting to the drain tile manufacturers. It tells of the results of a careful test made on an experimental plot in Decatur County, Indiana, under the supervision of a man from the Agricultural Department of Purdue University, and proves conclusively that tile underdrainage is far more valuable than manure, lime and fertilizer.

MANURE, LIME, FERTILIZER AND TILE DRAINAGE COMPARED.

IT IS MUCH easier to go along in the way generally accepted as the best than to branch out and find that old beliefs were in error, and not profitable. This is not written to theorize, but simply to give some actual results in connection with the use of tile drains and commercial fertilizers.

The field used is level clay upland or "white slash," and ten years ago was worn out, but in that time has been built up by frequent applications of barn manure and growing clover. A man from Purdue University selected the part of the field to be used, laying off thirty-six plats 14 feet by 155.5 feet, containing one-twentieth of an acre each. Eighteen of the plats were over three rows of four-inch tile drains, and eighteen plats on untiled land directly opposite, as shown in Figure 1. Three and one-half feet (one corn row) was left between each plat in a series, also a wide alley in each direction between the series.

Figure 1 also shows general plan of fertilization. All plats on outside, numbers ending in 1 and 6 received no commercial fertilizer. Plats 2, 3 and 4 in all series received a 10-5 mixture of phosphoric acid and potash at the rate of 200 pounds per acre on corn and 300 pounds per acre on wheat. All plats numbered 5 received phosphoric acid alone at above rates. All plats except those numbered 4 received ground limestone. All plats except two to grow clover and two to grow timothy.

In the spring of 1916, when the 300 and 600 series were planted to corn, the plats were divided lengthwise, and the south half received stable manure at the rate of eight tons per acre. This was spread crosswise or at right angles to the plats so each received the same in kind and quantity. These plats, except 302 and 602, which were in millet, were in soy beans in 1915, then sowed to rye and plowed under. Exactly the same treatment was given the six plats not tiled as was given the six over tile.

May 11 the corn was planted in checks and plowed both ways, the tiled plats being in good condition when the untiled were wet. September 22 the corn was cut and the crop from manured end of each plat was shocked separate from unmanured end.

October 31 the corn was husked, the results being arrived at by first weighing corn and fodder, then husking the corn and weighing the grain. The results are shown in the table in Figure 2. In making comparison keep in mind that the only difference between 301 and 306 and 601 to 606 is the result of tile drains; between 301 and 302, 601 and 602, is that 301 and 601 received no manure in 1915 and no commercial fertilizer in 1915 and 1916, while 302 and 602 received 300 pounds per acre in 1915 and 200 pounds per acre in 1916. Did it pay? Compare 306, no commercial fertilizer 1915 or 1916, with 305, with 500 pounds per acre in two years. Did it pay? Walk across the alley to the undrained plats and make similar comparisons. Go west 230 feet from 301, in 1916, to 101, in 1915, and we find 36 bushels per acre, no treatment, and 102, same distance from 302, 300 pounds commercial fertilizer per acre with a yield of 31.3 bushels per acre.

The effect of lime was very marked, unlimed plats 304 and 604 falling about 10 bushels per acre below limed plats on each side.

The effect of tiling was consistent, the difference in the crop on the tiled and untiled land being very marked. Where corn was husked and sorted, that from tiled plat was nearly all full sized solid ears, while from untiled plat about one-half was nubbins and of inferior quality.

Referring to the use of commercial fertilizers, the results for 1915 and 1916 corespond very closely. For this type of soil both seasons were very bad on account of extreme wet weather, though all plats in each series were handicapped alike. Farmers who pin their faith to commercial fertilizers should take their pencils and see if these figures are correct. Making rows three and one-half feet each way, two stalks to the hill, commercial fertilizer applied at rate of 200 pounds per acre will give each stalk .45 of an ounce, and at rate of 300 pounds per acre will give each stalk .67 of an ounce, and these amounts of 10-5 mixture, that is one containing 10 per cent of phosphoric acid and 5 per cent potash, are 85 per cent filler.

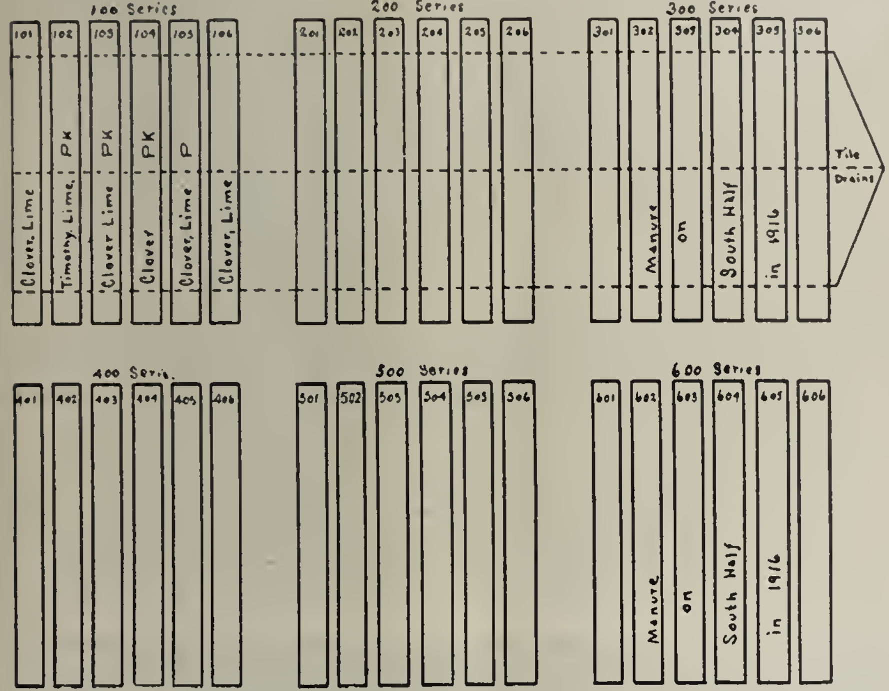


Fig. 1. Experimental Plot Showing Plan of Fertilization.

If plats 1 and 6 receive no treatment and other plats receive 200 pounds per acre on corn and 300 pounds per acre on wheat, eventually there will come a difference in favor of fertilized plats.—Walter M. Sharp, Decatur County, Ind. Reprint from The Farmers' Guide.

Plat.	—Manured End— Grain bus.	Stover lbs.	—Unmanured End— Grain bus.	Stover lbs.	Gain Manure bus.	Aver. bus.
			Drained.			
301....	65.7	3160	46.8	2320	18.9	56.2
302....	61.1	3240	49.2	2960	11.9	55.2
303....	56.3	3040	47.4	2800	8.9	51.8
304....	45.4	2860	35.4	2700	10.0	40.4
305....	51.4	2560	47.4	2360	4.0	49.4
306....	61.1	3200	47.4	2320	13.7	54.2
			Undrained.			
601....	31.4	1560	25.4	1420	6.0	28.4
602....	30.3	1540	26.8	1360	3.5	28.5
603....	26.8	1480	27.4	1560	—.6	27.1
604....	21.1	1280	16.0	1200	5.1	18.5
605....	30.8	1600	26.0	1580	4.8	28.4
606....	39.7	2060	33.7	1960	6.0	36.7

Fig. 2. Table Showing Results of the Experiment.

DRAIN YOUR FARM
WITH EVERLASTING CLAY TILE

Written for The Clay-Worker.

SEEN IN NEW JERSEY.

CONDITIONS IN THE brick trade change but little from month to month. A maker or a broker gets an occasional order, but the total is so small that it doesn't amount to anything as compared with previous business. And the worst feature of the situation is that nothing can help them until after the war ends and building operations are once more permitted. And one man's guess is as good as another's respecting that much-to-be-desired reality.

Prices are quoted at a range of $14.50 at the kiln, or $17 delivered. These prices vary in different localities and for different reasons, but the range covers substantially everything that is offered in the way of common brick. All structural operations, excepting those required for some form of government work, or the few which were under way and have been completed to save the owners from loss, are at an end. Nothing more is to be allowed in New Jersey until the war ends, be the time long or short. Architects say they have nothing on their boards. Contractors say they will have to join the army or go to farming. Carpenters and masons are all in the shipyards, the cantonments or the munitions plants. And the workmen who have hitherto been employed about the yards and kilns are in the army or in the camps in training to enter the army overseas. Under such conditions it is impossible to do business and few are attempting it.

In this connection it is interestng to note that one of the most prominent brick brokers in northern New Jersey is now seeking a place in the quartermaster's division of the army, where his undoubted ability in buying can be made use of. Moreover, his business is virtually at a standstill while the war lasts. He can sell, now and then, a few brick such as can be delivered by motor, or he sometimes gets an order from the government, but nothing beyond that. All brick men will have to do likewise in a little while longer and wait until the war ends to resume their business.

The Governor of New Jersey is taking a hand in the win-the-war propaganda, and he is discouraging all structural work of a non-essential character. For instance, a law is on the statute books levying a state tax for the construction of improved roads. It is the Governor's own law, introduced by himself when he was in the state senate. Now he advocates the suspension of its operation as long as the war lasts. And he is using his influence to curb structural work in all directions.

The most that those interested can hope for is a resumption of all branches of the business upon a scale unprecedented as soon as the war ends and allows the renewal of activity. Price and shortage of help may then exert an influence, but the market will improve and the manufacturing end will benefit to some extent, regardless of any difficulties which may then develop.

Deliveries of brick from all yards in the northern part of the state is largely by motor. Occasionally a car comes in from a distance, but it is only now and then. E. M. Rodrock, of the E. M. Rodrock Company, often utilizes his vehicles, motors and teams, in transporting brick or other building materials for those who can get them no other way, when his own deliveries are not pressing. He has hauled a great many thousand brick in the northern part of the state during the summer, accommodating those who wanted small quantities and had no means of getting them.

He says that dull as business is he could sell more if he could get deliveries. But if he places an order he has no means of knowing when the material will be delivered, consequently he is unable to satisfy all the demand that develops even under such adverse conditions as now exist. It is an augury of what may be expected when once the repression ceases.

Along the Hackensack river the yards are either closed or are closing for the winter. The total output this year has not exceeded one-fourth of the normal. They were, of course, cut to 50 per cent. at the beginning, and shortage of help cut that in two again. A few kilns only have been burned, with the result that the district is virtually bare of brick. The Hackensack Brick Company is about the only one which has done any considerable amount of business, but its fleet of motor trucks and the demand which has come from all directions for brick for small repair jobs or for the erection of garages has helped materially and they record a fair trade for all the season. They are about closing now and the last kiln is laid up for this year.

The burned clay industry of New Jersey is making a record for the Fourth Liberty Loan which will make its members proud when they know what has been done. The industry, though hit as hard as any by the war and the restrictive regulations made necessary for its victorious conclusion, has responded liberally each time and is doing better than ever before with the fourth loan. The contributions are coming in rapidly and the outlook is very promising for a record.

A. L. B.

SEWER PIPE FOR RAT-PROOF FOUNDATIONS.

Over in Franklin county, Missouri, Wm. Miller, a farmer, has solved the rat-proof corn-crib problem in a manner that has attracted the attention of the building material papers. And the solution was found through using sewer pipe for the foundations under the crib. The vitrified outer surface of the pipe makes it impossible for rats and mice to climb it, and it is considered much superior to metal covered posts, for metal will rust while the sewer pipe is permanent. The sewer pipe were set on end in concrete ground foundations, then filled with concrete. This makes a rigid and permanent crib foundation, as well as one that will keep out the mice and rats.

SOME SHIFTING IN MAGNESITE.

Magnesite, which is quite largely used as a refractory material, and is called for by the steel industry both in the form of brick and natural has been coming largely from California and Washington since the war. And we have enough of it in this country that we are independent of Europe. Lately, however, there has been some shifting, a getting of considerable quantities from Canada by eastern refractory manufacturers using this product. The Canadian product is delivered by boat to such points as Buffalo, Cleveland and Chicago, and it is the saving in freight cost by this means that has been the shifting lever of the trade. For the first six months of this year the domestic production of magnesite was 93,700 tons, more than half of which came from California, but the Washington production is coming to the front with new development and promises to show gains during the last six months of the present year.

NEED FOR BRICK LAYERS IN WAR SWEPT COUNTRY.

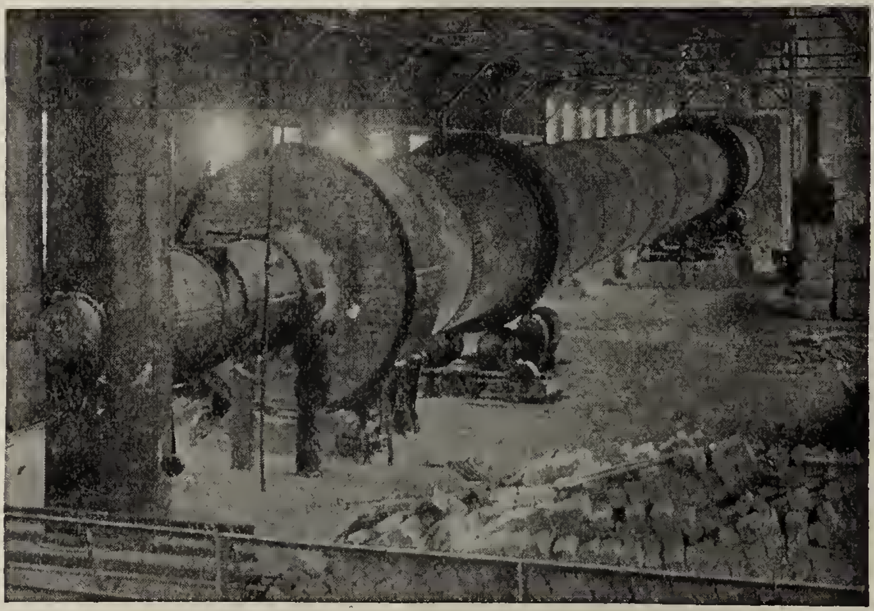
One reason why they need brick layers with our expeditionary forces in France is that lots of brick from destroyed towns and cities is available for structural uses and it is both better and easier to erect many of the needed buildings of brick than lumber. Also they will be better buildings when erected.

A MODERN MOTOR-DRIVEN LIME PLANT

DURING THE PAST FOUR YEARS the Vermont Marble Company has been operating the largest business of its kind in the world. Together with the vast amount of valuable stone taken from the quarries there has also been a great deal of unnecessary waste, which has consisted chiefly of small and unsound blocks of marble. Conservation to the extent of using some of this waste as crushed stone has been a part of the company's routine of work. This, however, left an amount of it to be disposed of.

Three years ago, experiments were made on different grades of marble to determine what of lime could be obtained by burning it. The test made such a good showing that the company decided to build a modern, well-equipped lime plant. Furthering their plans, a plant designed by the Fuller Engineering Company was started during the summer of 1915. In the early spring of 1916 the first lime was produced.

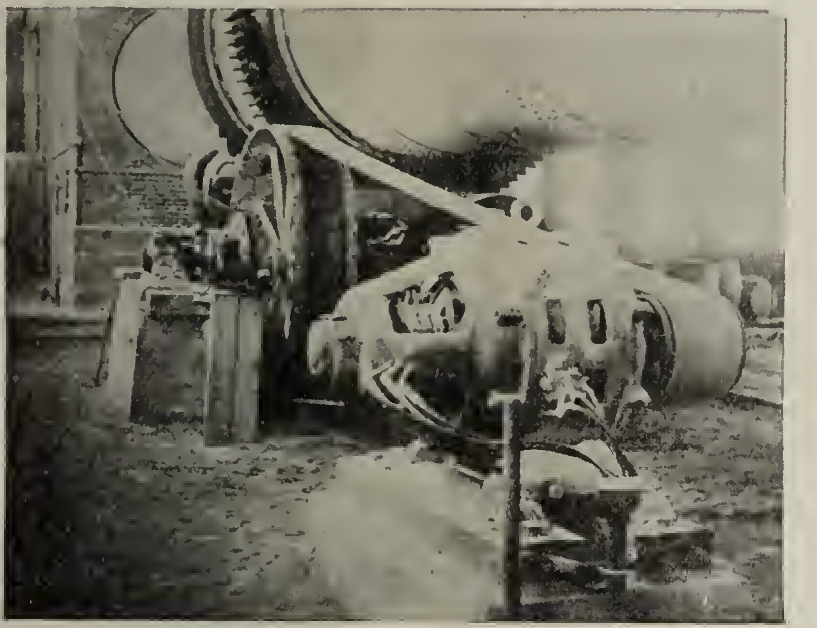
The location of the plant near the extensive West Rutland quarries, and the sidings which run on both sides of the plant, makes possible the bringing in of coal and waste marble, as well as providing a way to take out the finished product. The main building is of steel, 420 feet long and 40 feet wide. A producer house, 80 by 30 feet, lies just east of the main building and the office, coopers' shop and transformer station are just west of the main building.



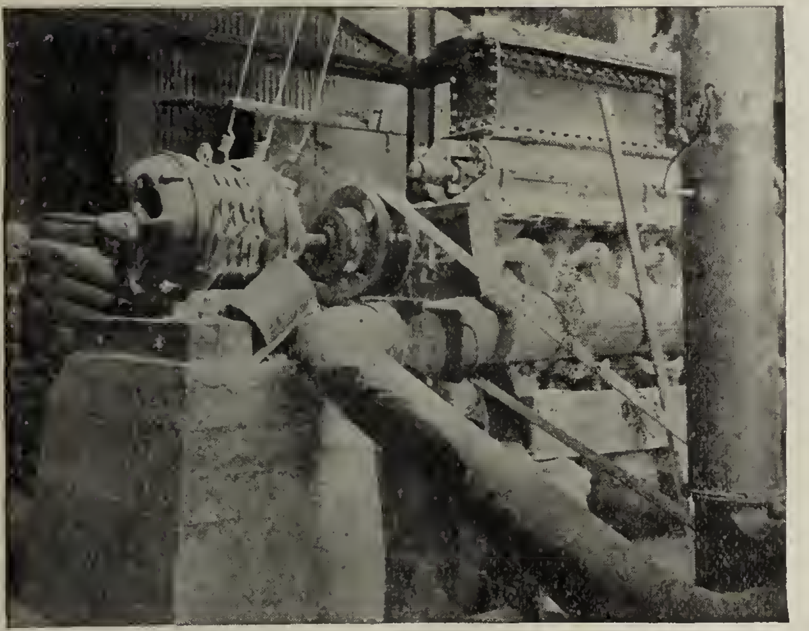
General View of Kiln.

Power is brought from the Vermont Marble Company's transmission system to the 25 by 35 foot transformer station, built of waste marble, over two 11,000-volt, three-phase, 60-cycle lunes, where it is stepped down to 460 volts by three 200 k. v. a. self-cooled transformers. These two 11,000-volt lines are normally in phase, so that the bank transformers can be shifted from one to the other without any interruption of service. This arrangement was necessary to avoid shutdown of the plant when it was necessary to change insulators or make repairs to either line. The transformers are of large enough capacity so that two connected in open delta will not be seriously overloaded at any time. The fact that power must not be off for more than a few minutes, owing to the liability of warping the revolving kiln, necessitated the extra precaution in maintaining two power lines, which are normally in phase, but may be fed by either of two entirely different power systems, if one line or system is out of service.

A 230-volt motor-drawn generator at the main West Rutland substation, nearly one-half mile south of the lime plant, furnishes the direct current for the 25-ton traveling crane. All motors, except those for the crane, are 440-volt, three-phase. 60-cycle induction type. A 460-volt to 115-volt lighting transformer furnishes the light for the plant.



Kiln Driven by 35 H. P., 720 R. P. M. Motor.



Bagger Operated by A-15 H. P. Induction Motor.

Fine Pulverizing Mills.

The plant and its operations can best be understood by following the products through from the time the stone is delivered to the plant on flat cars loaded with waste marble from the nearby quarries and blackpile.

The material as it comes to the plant is in miscellaneous sizes and if over 12 inches in thickness the blocks are handled by slings and craned into the 60 by 48 jaw crushers. From the jaw crusher it passes by gravity with sizes below 12 inches through a No. 6 McCully gyratory crusher, set to reduce down to two inches and less. The material is then elevated and screened. The screen rejection is run through a set of 36 by 16 Superior rolls, to reduce it to one-half inch thickness or less. All of the material is then elevated and conveyed into storage or kiln bins, whence it can be drawn any time it is desired.

This department has eight motors of 272 h. p. total and can reduce 25 tons of stone per hour from blocks of 150 cubic feet to stone one-half thickness or less.

Motor on—	Horsepower
Jaw Crushers	150
Gyratory Crusher	50
No. 1 Elevator	7.5
Screen	7.5
Rolls	35
No. 2 Elevator	10
Conveyer	5
No. 3 Elevator	7.5

The crusher stone is fed automatically from the kiln bin into the bin by a cradle feeder. The kiln is patented after the familiar cement design, eight feet in diameter, 20 feet long, installed with a 4 per cent pitch. The kiln is belt driven from a 30-h. p. variable speed motor, geared to give ten speeds, from 0.5 to 1.5 r. p. m., as desired.

The producer gas is introduced through a flue into the lower end of the kiln and in burning furnishes the heat for calcining the stone as it gradually rolls through the revolving kiln. A temperature of 2,200 degrees F. is maintained in kiln, which drives off the CO from the stone, leaving the quicklime. The hot lime drops from the lower end of the kiln into a revolving cylinder, in passing through which it is cooled by the draft of air on its way into the kiln to support combustion. The cooled lime is elevated from the discharge of the cooler and after screening is deposited into large storage bins.

The producer gas is made as used in a 10-foot Chapman mechanical gas producer from Pennsylvania gas coal. The coal is discharged from the hopper bottomed cars through a coal crusher by conveyer and elevator into a large storage bin, or into the producer bin. From the producer bin it is fed as needed by the attendant. The producer is blown by a steam jet, resulting in lean gas, containing over 50 per cent nitrogen, which in burning gives a mellow flame. The gas is conveyed into the kiln by a heavy brick lined flue having suitable openings for cleaning. Producer gas which gives a long flame of comparatively low temperature and of considerable volume is used. Gas is preferable to coal in the cases where clean lime is desired.

The kiln operation is checked by a Bristol recording tachometer, as to speed and output, while the quality is recorded by a Truesdell automatic sampler. This department has nine motors and produces 60 tons of lime per 24-hour day.

Motor on—	Horsepower
Coal Crusher	10
Bin Conveyor	5
Coal Elevator	7.5
Producer Conveyor	5
Producer Drive	5
Kiln	30
Dust Conveyor	5
Cooler	10
Lime Elevator	10
Total	87.5

Hydraulic Department.

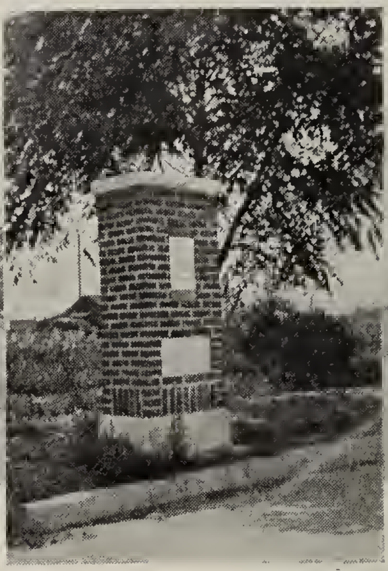
From one of the storage bins containing CaO, lime is automatically drawn for hydrate manufacturing. The Kitzer process is used, which essentially is mechanical stirring of the mixture of lime water through 75 feet of 24-inch piping. If the proportions of lime and water are correct, the dry, fluffy, white powder of CaO H results at the end of the stirring tube. As this powder may contain some grit or other impurities, it is air separated by means of Raymond mills, cyclones and canvass vass tubes into Vermont hydrate and Superfine hydrate, while the impurities are rejected. Some idea of the fineness of the hydrate may be had from the statement that less than 6 per cent is retained on a 200-mesh screen, while the Superfine hydrate is still finer. These materials are packed into paper bags by a Bates bagging machine. This department has six motors and can produce four to five tons of hydrate lime per hour.

Motor on—	Horsepower
Hydrator	15
Raymond Mill	5
Raymond Mill	5
Separating Fan	20
Separating Fan	20
Bagging Machine	15
Total	80

Besides the equipment described, the plant has a cooper shop with a capacity of 500 barrels per day. Barrels are delivered into the kiln building automatically as needed by a barrel elevator and run. The elevator is run by a machine, parts, barrel stock, barrels, tools, etc., complete the layout.

Brick Road Marker.

Frank L. Hopely and His Auto.



On the Lincoln Highway.

At the Edge of Bucyrus.

Miscellaneous Motors—	Horsepower
Air Compressor	15
Pump in Cooler Pit	3
Pump in Quarry Pit	2
Barrel Elevator	2
Total	22

There are in the plant 27 induction motors with a total horsepower rating of 402 and three direct-current series motors on the crane with a total of 55 horse-power. The induction motors are squirrel-cage type except the 150 h. p. kiln motors, these two being of the would-secondary type—the crusher motor for starting duty and the kiln motor for continuous running at any point between one-third and full speed. The plant uses between 25,000 and 30,000 kw.-hrs. per month.

The lime manufactured by the Vermont Marble Company is of an exceptional purity and likewise of a high grade. It is granular similar to sugar, rather than like the so familiar lump lime. Due to the fact that it is burned at a comparatively low temperature, it slakes very rapidly, so quickly, in fact, that it is advisable to stir the lime into the mixing water in order to keep the slaking temperature within reasonable bounds. In the market, this product is favorably received on account of its smooth working putty, whiteness and causticity.

THE HOME OF THE AMERICAN CLAY MACHINERY CO.

BUCYRUS is one of the most noted cities in the Buckeye state, made so in part by the American Clay Machinery Company, whose ads in The Clay-Worker have made Bucyrus a household word among clayworkers the world over. Another distinction of which the native townsmen are not so proud is the fact that it is the home of "Golduh Stubbins," the quaint figure of Chic Jackson's series of comic pictures.

One thing that every citizen of Bucyrus is very proud of is their fine brick paved roadways, smooth, dustless highways, which connect the town with the surrounding country. It is on the main line of the Lincoln Highway, and through the courtesy of Frank L. Hopley, manager of publicity of the A. C. M. Co., the writer recently took a spin over a section of that great highway, and made a snapshot of one of the brick markers built for the convenience of transcontinental motorists.

The accompanying cut shows that the marker is an attractive as well as a permanent sign post. It is five feet high above the foundation, rests on a six-inch base, and is capped by a four-inch cap stone. The brick column is two feet nine inches wide to the road and two feet deep. In the face of each post are two terra cotta tablets, one displaying a large letter L and the words "Lincoln Highway" in blue on a white background; the other bearing the date of erection, etc.

Bucyrus was never so busy and prosperous as it is at this time. The A. C. M. Co.'s plant employs several hundred men and women turning out war stuff. The indefatigable president of the company, Raymond C. Penfield, has surely done his bit to help win the war, not only keeping the plant at Bucyrus and that at Willoughby running full time, but has farmed out an immense amount of work to other plants at various points. During the past season, he has completed another large factory at Mansfield, which is being operated to capacity.

However, they are not neglecting their line of clayworking machinery which embraces well nigh everything in the way of mechanical equipment needed in or about brick, tile or pottery plants. They are now preparing an interesting catalogue to be printed in English and Spanish with a view of meeting the demands for machinery that will come from South America after peace is declared. A little later when the Yanks have reached Berlin they may add a French edition, and perhaps other languages, if, in the course of time, they become sufficiently popular.

Those brick markers along the Lincoln Highway are good signs of permanence, and the brick paved sections of the highway should make their mark on the route, too.

MOTORING FROM COAST TO COAST.

FRANK L. STILES, who for a third of a century has been one of the leading brick manufacturers of New England, is motoring over the old National trail from New Haven, Conn., to Pasadena, Cal. He started Monday, the 7th, and reached Indianapolis Friday, October 11. He is accompanied by his wife, his niece, Miss Dorothy Stiles, and her chum, Miss Doris Hall, and a chauffeur. He is making a leisurely trip which so far has been one of unmixed pleasure. The younger members of the party were particularly enthusiastic over the fine brick paved highways in Ohio. "If such roads were the rule," they said, "instead of the exception, such a trip would be fully as comfortable and much more interesting than one in a Pullman car."

"Frank" and Mrs. Stiles seem to have found and sipped of the "Fountain of youth." They appear as spry as they did twenty years ago when they were regular attendants at the N. B. M. A. conventions. The fact that for a number of years they have been spending their winters in California, which has prevented their attending the National meetings, has not lessened their love for the Association nor dimmed their fond recollection of the warm friends they used to meet and greet in the good old bygone days. They are both optimists and see the bright side of things, so Frank is not discouraged by the dull times now prevailing in the brick business. "There will come a building boom after the war that will make us all hustle," he said. As he is the head of four extensive building brick concerns, his optimism is founded on the faith of knowledge. "There is no building material quite as good as good brick, and we will be BACK TO BRICK in good time," says "Frank."

Frank L. Stiles, New Haven, Conn.

TRAFFIC THRILLS ALONG LINCOLN HIGHWAY.

The Lincoln Highway is the route of first interest in the exposition of modern traffic as indicated by recent events upon the Pennsylvania section. The passage of huge trains of heavily laden motor trucks, hurrying supplies to eastern ports for shipment to the troops in France, is a matter of daily record at practically each stop upon the Highway across the state.

Motor ambulance units are also noted upon the road bound for the same destination. Vast amounts of commercial freight are transported over this route by motor vehicles operated by private enterprise. The traffic is constantly growing in volume and variety of character.

Not only upon the Lincoln Highway proper but in the air above are signs of the future movements of transportation. Airplanes are frequently noted following the general line of the Highway in extended cross country flights.

EVERYTHING READY—EXCEPT THE ROADS.

The stage is being set for American leadership throughout the world.

Great cities, pulsing with energy and linked together with transcontinental lines of railway, are, on one hand, concentrating a war-winning power behind our forces at the front.

Our Cities Are Ready.

Back and away from these cities, on the other hand, lies the country, cut into more than six million food-producing farms.

Our Farms Also Are Ready.

Between farm and city there lie more than two million miles of highway filled with mud and dust, ruts and holes, obstructing the passage of produce at a loss of more than $300,000,000 a year, to say nothing of the loss incurred in manpower and in inter-community traffic.

Our Roads Are Not Ready.

Sooner or later they must be improved to complete our transportation system, and they must be improved with a view to meeting the demands of the traffic that is here—and of the probable greater traffic that is to come. Surface them with vitrified brick and posterity will profit thereby.

THE SILICA REPORT.

The U. S. Geological Survey report on the production of silica and its use for pottery, paints, fillers, polishes, etc., shows a total for the year 1917 of 704,229 tons, valued at $1,636,995. This is an increase of 187 per cent in quantity and 68 per cent in value as compared to 1916, and it is one of the few cases of the year where quantity increase exceeded value increase.

Silica (quartz) as considered in this report is that part of this product used mainly for pottery, paints, scouring soaps, wood fillers, for polishing, etc. And it is pointed out that silica for pottery should contain less than 0.5 per cent of iron-bearing minerals.

In the pottery industry where the silica is usually called flint, it is used in the body of the ware to reduce shrinkage, and also in the glazes.

THE RETURN TO NORMAL.

Now and then one feels moved to say that, "there ain't going to be no such thing as a return to normal," and this argument is probably good in so far as going back to just where we were before the war begun, because there is no such thing as going back—we are going forward. The question, though, is, just what will we settle down to? What will happen to commodity prices, to labor cost, and to all the things that have been inflated by war's activities? Plainly, there will have to be some sort of a shaking down and a readjustment all around. Some of the necessities of life we know will come to lower price levels. The same is true of the materials of construction. But all around it is a question of just when, and just how much. Some of these questions we must get settled before we can get our balance again. There will have to be a readjustment all around, and there is great need for full co-operation among business men the country over to the end that we may get readjusted and settled down to regular business again with the fewest possible hitches and hardships.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Advice for Conservation of Oil.

Dear Mr. Secretary N. B. M. A.:

Yours of recent date relative to saving of oils, duly received. My practice and advice to all manufacturers of clay products is that drip pans should be placed under all the bearings of the different machines and engine bearing. The oil so collected each day should then be put through an oil filter, after which it is fit to use on lineshafts or other heavy bearings. The drip pans should be made out of good block tin.

Where fuel oil is used under steam boilers, or on kilns, for the burning of clay wares, in starting the fires, a small vessel, cup shaped, should be used in addition to the baffle tile. One cup should be placed in each fire box, immediately under the end of the oil burner, so as to catch any oil that may drop during the period of getting the baffle tile sufficiently hot to burn the oil and generate the gases. The cups can be made out of clay and are shaped like a basin. Where steam is used for atomization these cups are most valuable, as they prevent the fire from going out during the watersmoking of kilns, save oil and unnecessary labor. The cups and baffle are removed when the furnaces become sufficiently hot to burn the oil without waste.

I used this system both in Texas and California, with success, though I have visited plants and seen the oil running to waste, during the process of watersmoking, from every fire box in the kiln.

I shall be glad to help to the best of my ability in any capacity to win the war, but am not financially fixed to give my services in traveling without some compensation. The war stopped the building of new plants, so I have not done anything since last November, but I am open for anything, even to taking Kaiser Bill by the neck and dumping him into the top of a good white-hot kiln. We are doing all we can to win the war, and our grandson, Elmer A. Reed, who was for a time in the paving brick business with his uncle at Fort Scott, Kans., is now in the navy and stationed at Puget Sound, Wash.

Yours truly,
ALEX. R. BATLEY,
Brick Works Engineer.
Table Rock, Neb.

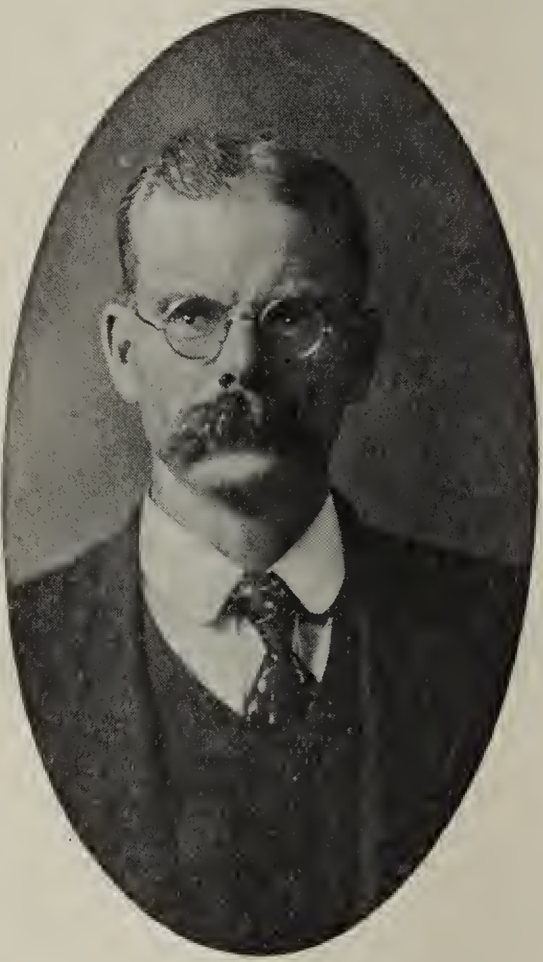
The Minter System of Burning Brick.

Editor The Clay-Worker:

From the numerous inquiries regarding the Minter system of burning round down draft kilns, I am sure many readers of The Clay-Worker are interested and therefore will tell them of it briefly and thus answer in a general way as to what it is and what it will do in economizing fuel and time. The Minter system was designed and applied by a practical man of thirty years' experience in various branches of the clayworking industry, beginning as a potter's apprentice more than twenty-five years ago, since which time he has been continuously identified with the industry, mostly brickmaking.

The chief merit of the Minter system is the distribution and control of the heat currents. This is accomplished by simple means but the principle is new as is evidenced by the fact that patents have been granted and there was not a single question raised against it in the patent office, there being nothing on record conflicting with it at any point. That is, no previous patent conflicts with the Minter system.

The first requirement for successful application of the Minter system is good drainage; brick and tile yards that have round down draft kilns and good drainage can apply the Minter system to good advantage as can also many plants that have the old square kilns. These can now change to round down draft kilns and make a much better product at less cost. They will also get the benefit of the most flexible and adaptable method of burning in the world. There are not as many kilns required for a given capacity as for the ordinary periodic kilns, as by the Minter system each process of the burning is speeded up. This means a saving in time and a consequent saving in cost. The Minter system can be applied to most any yard with but little interference in the operation of the plant. This feature alone puts it in a class by itself. "The proof of the pudding is in the eating." Here is one user's experience, given in his own language:



M. M. Minter, Albany, Ga.

"Results of latest test, October 3, 1918.

Kiln No. 3, fired at 4:00 p. m., after water smoking and preheating.

Closed October 6, 8:00 a. m. Time sixty-four hours, cone 3. Weight of brick, 4½ pounds. Thirty-foot round down draft kiln.

Capacity, 86,000; fuel used, mine run Jellico, 41,900 pounds.

Can you beat it? For further particulars, see ad on page — or write to

Yours truly,
M. M. MINTER,
Flint River Brick Co.
Albany, Ga.

Brazil Clay Men Look With Favor on Women Workers.

Editor The Clay-Worker:

Women workers in the clay factories of Brazil may become a reality before many weeks, or soon after the 18 to 45 class men are called into service.

An official of one of Brazil's largest clayworking plants, who has just returned from Ohio, where he visited several cities in which big clayworking plants are located, states that he was surprised to find women doing the work of men. He states that he asked the superintendent of one plant how the women got along with the work, and learned that they are regarded as much more efficient than the boys under the draft age, who have heretofore been employed doing the light work around the factories. Women are not used at wheeling, yard work, off-bearing, stacking or any of the so-called hard jobs about the plants, but they are proving to be very efficient at trimming and bench work and scores of other tasks performed by men and boys.

An interview with the superintendents of the various clay plants in Brazil indicates that women workers will be on the job within the next few weeks, possibly by November 1. The ranks of the clayworkers are gradually being thinned by the draft, and while the plants are not running at full capacity, they still have trouble in keeping a sufficient number of employes.

One superintendent was asked about wages for the women workers, and he replied that there would be no discrimination in the matter of wages paid to men and women. It is estimated that the minimum wage possible for the women workers in the Brazil plants would be from $15 to $17 per week, this being the wage now earned by the boys doing the light work around the plants.

George Daniels, who for the past eight years held an important executive position with the Clay Products Company, with headquarters in Brazil, Ind., has resigned his position and has returned to Indianapolis, where he has accepted a position. He is succeeded in Brazil by George Robinson, of Chicago.

Brazil's several clayworking plants continue to operate, though at about half the capacity of before the war. Most of the plants are engaged in the manufacture of farm tile and silo blocks, while the Clay Products Company is working on a big order for building tile for Armour & Co., of Chicago.

A. SUB.

Everybody Busy at Gary, Ind.

Editor The Clay-Worker:

Replying to yours of the 10th, the building conditions in Gary and the Calumet district of Indiana are looking much brighter for fall and winter work, especially since the receipt of word from Washington that this district would be exempted and a local commission, of which Capt. H. S. Norton, president of the Gary Commercial Club is chairman, has been appointed to pass on all applications for building permits. This will simplify matters in regard to getting clearances for construction of houses for the employes of the mills which are working 100 per cent. on war orders.

Yours very truly,

Gary, Ind. W. H. FYFFE PARRY.

Influenza Adds to the Woes of Manufacturers.

The Didier-March Company, manufacturers of refractories, at Perth Amboy, N. J., writes that the recent terrific explosion at the powder plant in that vicinity did not cause a great deal of damage to neighboring clay plants but all of the manufacturers employing large numbers of workmen are suffering severely from the effects of the influenza epidemic. The working force of the Didier-March Company was reduced more than one-third, which is unfortunate, as they are working to capacity on refractories, the major part of which are considered ESSENTIAL by the government. Their railroad tunnel kiln, illustrated on page 301 of this issue, has been operated to capacity without the loss of a single day throughout the season.

OBITUARY.

Pennsylvania Brick Man Victim of Influenza.

Clyde C. Murray, one of the younger well known brick men of Eastern Pennsylvania, died at his home in Reynoldsville, Pa., October 7, a victim of influenza, which developed into pneumonia. Mr. Murray was born in November, 1883, and after graduating from the Allegheny College at Meadville, Pa., engaged in the brick business. He was appointed manager of the Reynoldsville Brick and Tile Company in 1907, which, through his efficient management, became one of the most prosperous plants in that section, and four years later he was elected president of the company. He was instrumental in organizing the Eastern Pennsylvania Brick Manufacturers' Association and had served as secretary of the organization for four years. He was a member of the N. B. M. A., and had many friends in the industry in various sections of the country. Mr. Murray was unmarried, having made his home since childhood with his brother, Dr. John H. Murray.

H. Jason Knapp Answers the Last Summons.

H. Jason Knapp, a prominent resident of North Tonawanda, N. Y., died suddenly at his home in that city September 8, following a stroke of paralysis. Mr. Knapp had suffered a slight stroke the previous week, but had been able to attend to his business affairs until the day previous to his death when he had another stroke. Mr. Knapp was fifty-five years old and had lived in North Tonawanda for twenty-eight years. He was interested in a number of business enterprises, chief among which was the Central Clay Products Company, with plant at Beach Ridge, N. Y., of which he was president. He had been a member of the N. B. M. A. for a number of years.

Mr. Knapp was identified with the social and civic life of North Tonawanda and his death is a distinct loss to that community. He took an active interest in Masonic affairs, belonging to the different branches of that order, and had served as trustee in the Methodist church for twenty-eight years. A wife, three daughters and one son survive him.

Didier-March Tunnel Kiln Engineer Victim of Influenza.

Louis A. Witte, chief engineer of the Didier-March Company, Perth Amboy, N. J., died of pneumonia September 12, in his thirty-fourth year. Mr. Witte was a man of unusual ability and had been associated with the Didier-March Company since that firm was incorporated in 1906. His untimely death is to be greatly regretted, for he had shown great aptitude in his chosen calling. He was a native of Baltimore and a graduate of Polytechnic Institute of that city. He had specialized in ceramic engineering and was an authority on fuel economy as accomplished by the use of the tunnel kiln.

U. S. Geological Survey reports show that the total bituminous coal production in 1917 was 551,790,563 tons, an increase of about ten per cent. as compared to 1916. Maybe we can yet boost the present year's production enough beyond that to wipe out the coal shortage and make smooth running for those industries needing coal in 1919.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T, A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXX. OCTOBER, 1918. No. 4

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

The fall harvest includes Victory.

* * *

It is the season of falling leaves—and waning autocracy.

* * *

There will be no heavy stock of brick carried through this winter.

* * *

"Buy a Bond" was the song hit of the season. And the people did it.

* * *

It is going to take a lot of furnace and kiln efficiency to make out a fuel sufficiency this winter.

* * *

The war has taught the people thrift, but it seems to have brought waste and great extravagance into government expenditures.

* * *

Not only are those among us of foreign tongue being taught our language in the army, but many native born are being taught to read and write and obtaining something in the way of an education that would never have reached them had the selective draft not been put into action to bring them into touch with their fellow men.

* * *

A brick paved place for feeding hogs not only saves feed but it makes for healthier porkers.

* * *

It is well to do what winter running you can, for the stock will likely be needed early in the spring if not sooner.

* * *

Speaking of brick machinery abroad, there is a national awakening in China that may make an opening worth looking into.

* * *

One of the things we will soon need for the good of the country is a much larger army of brick layers. Let us lay plans to recruit this army in due time.

* * *

Get your machinery into winter quarters and protected against the invasion of rust. You will likely need it all next spring, so keep it in order against the day of need.

* * *

It is not the eight billion dollars total on that revenue bill that staggers the average man so much as confronting the task of figuring out just what part of it he should pay.

* * *

Some of the brick men may turn back to wood burning again, but since the fuel value of coal is from two to two and a half times that of wood by weight there will not likely be much permanent turning back to wood.

* * *

Good roads do not merely mean to the brick man a chance to sell paving brick, but with good roads and motor trucks the local delivery of the future will extend out over a whole lot more territory. That is the big meaning of good roads to the brick man.

* * *

Let us see to it that when the great building boom does come to this country of ours that clay products have the dominant place as a building material. All of which means that it is time to look over the brick boosting machinery and put it in good working order.

THE GOOD ROADS OF FRANCE.

One of the things that has made possible the handling of our big army in France, with all the supplies that must go with it, is the good roads of that country and the good motor trucks we have sent over. That of itself is a great argument in favor of further pushing of good roads work here, but it is being predicted that even a greater argument is coming. The prediction is that when our boys return from over there every returned soldier will be a personal and persistent advocate of good roads. Thus the good roads of France promise to furnish us with a great lot of good roads propaganda that will be a part of our compensation for the great war.

BACK TO BRICK.

If the signs of the times read right the day draws near in which we are to hearken back to brick, the day of reconstruction when the clayworking industry will turn back to its work in force and the day of unrestricted and unrestrained building, when the building public will turn to brick as it never has before. There are in fact many straws in the wind pointing toward big things in the building brick line in future. Our boys who go abroad will see things and learn things that will impress them with the advantages of permanent building and the beauties of architecture, and with brick as the one best bet in building material. Meantime the price of lumber, and the stumpage from which lumber is made, has increased so that building with lumber now costs so much that this of itself turns the mind of the builder toward more permanence. In fact all around us the signs point toward a more general use of brick in building operations than we have ever seen before. When the new building era starts brick will have its greatest opportunity to dominate as the national building material. It is a time for the brick men to be preparing to supply the needs and to be hanging out those Build-with-Brick signs as a reminder that we are hearkening back to brick.

FUTURE PRICE LEVELS.

Already much speculation is being indulged in about after-war readjustments and future price levels. Some contend that the high price of coal, for example, will continue at least two years, and that with labor and many other things it will be the same way. Some go to the other extreme, predicting an immediate slump and then a gradual readjustment. It is very plain that we will have to face the problem of future prices, and that opinions differ as to what they may be. Also it is logical to argue that the prices of any given product will depend some upon the actions of those producing it. If the brick trade is to be sure of fair prices in the future it is time to get together, and get to an understanding of what prices should be under varying conditions.

ADVERTISING.

It is refreshing to note that instead of ordering any curtailment of advertising by the printed word the authorities are recognizing something of the great value of advertising and are inclined to encourage it on the part of business as well as to make free use of advertising space to carry government messages. It is essential for the business man to keep his name and business before the public, even though he may be temporarily so busy on government work that he cannot supply the public needs. There is the trade and good will connection to be preserved—one of the important assets of any business—and the most effective way to this end is through persistent advertising. That calls for a continuation of advertising at present, and the big vista of the future looming up before us suggests bigger doings and bigger spreads of advertising than we have ever known before.

SECOND-HAND MACHINERY.

The shortage in machinery resulting from the scarcity of metal has made an open way for the refitting and sale of all the used machinery of the country that is still good for service, and it has been a great day with those concerns making a specialty of handling and refitting second-hand machinery. Also many a man needing machinery has found the best answer somewhere in used machines. This is especially true of heavy contractor's machinery, including hoists, shovels, etc. Some of this left idle by the turn of things has been made to fit into other needs and has thus served a purpose as well as been saved from rust. It is likely, too, that many a clayworker will find it advisable to refit some of the used machines, either of his own plant, or that may be secured from others to get equipped for the next spring run. Those who have machinery they do not need that can be made to do good service yet, or may be refitted and put into service, will do well to be making this fact known, for in so doing they may serve themselves and also some one else a good turn. We will likely need all the serviceable second-hand machinery to help out during the next few years till we can once more get caught up with our metal supply and our machine shop work.

ASSOCIATED COMMON.

The fact that the common brick industry is to quite an extent a local business and many of its problems are of a local nature has ever been a drawback to thorough and effective organization of a national character for the improvement of commercial conditions in the trade. This we all know well enough, but what we need to realize right now is the call for universal co-operation to handle the broader problems of the industry of a national character, and to get the broader view of a national effort for more effective local co-operation.

From time to time there have been efforts of a national character to take up the commercial side of the brick business, and always good has resulted, and more might have resulted from a better support of such movements. Recently the Common Brick Manufacturers Association of America was organized by representative and enterprising brick manufacturers at Chicago and it is the desire here and now to make a plea to the trade far and near that it lend a hearty hand in support of this effort.

The lumber folks have just given us an example of how local business and effort can be profitably welded into a national federation, that is, the retail folks who do only local business. They have their state and regional organizations in which they take up their local problems. But they recognized that national problems come up now and then in addition to local matters, so they have formed a national organization. And it was through this federated effort that a committee of lumbermen going to Washington secured an immediate modification of the non-war building restriction order so as to allow the erection of new farm buildings not to exceed $1,000 in cost without a permit.

That is a nice illustrative concrete example of how national organization can get results from national problems when fully supported by and representing the country at large. And there are not only problems of a nation-wide character coming up right along these days, but a properly supported central organization can be of much assistance and encouragement in local co-operation and the solving of local problems.

Let us get a full realization of all this into our minds and then get busy in hearty support of the latest organization effort in the interest of the great common brick industry.

CLEANING MACHINES.

Machines whether running or idle should be thoroughly cleaned periodically, and when they are booked to stand idle for some time a good cleaning is the first step to putting them in shape to go through that time in good shape and free from rust. Dirt and mud can be washed from machinery with water, but where grease and oil hold forth some special treatment is best. Gasoline, benzine and coal oil are the general cleaning agents for machinery and parts that become foul with grease, with plenty of waste and old rags.

The one objection to these things is the danger of fire. At times this is not great enough to bar their use, and when this is the case they furnish the simplest answer. But there is another cleaning agent that can often be made to serve, and that is steam. The insurance people endorse the idea of cleaning machinery with steam jets, and if you have a power plant that is working this is one of the best cleaning agents you can use.

To clean with steam calls for a jet and a length of steam hose. The length of hose required will depend upon the distance from some steam line you can tap into. The nozzle or jet end can often be made with a length of small pipe, covered with some insulating material so that it can be handled. And where you can get a jet of steam to a machine the cleaning becomes very easy and can be made thorough in short order. So if you are in shape that you can do it try connecting up a steam hose and jet for cleaning the machine. It is both good and safe.

THE BOOK OF SMILES.

"Sing a song of Thrift Stamps, a pocket full of dough,
Sixteen little Thrift Stamps all in a row.
When the war is over what a time there'll be,
When 'four bucks' will be 'five bucks' in nineteen twenty-three."

The above excerpt from the Book of Smiles, and those that follow, indicate the amusing character of the little joker which has just enough of serious suggestion in its pages on the always important topic of drying brick, to leaven the loaf of fun which is more than ever essential these trying war times. The front cover carries this:

"After December 1st the pretzel will lose its lifelong companion," and the back cover this: "War Industries Board has ruled that babies' diapers must be made smaller. We protest against this attack on the rear of American infantry."

The center pages are devoted to the Standard "one-man" drier illustrated with a miniature cut which is similar to that which appears on page 314 of this issue. If you enjoy a bit of clever humor, send for a copy of The Book of Smiles, addressing the Standard Dry Kiln Co., Indianapolis, Ind.

EXHIBIT AT THE NEW YORK CHEMICAL EXPOSITION OF INTEREST TO CLAYWORKERS.

One of the interesting exhibits at the Chemical Exposition at the Grand Central Palace, New York City, was that of the Thwing Instrument Company, of Philadelphia, where the various instruments for recording and measuring kiln temperatures, manufactured by this company, were displayed, including the Thwing Operation Recorder.

Dr. T. Poole Maynard, of Atlanta, Ga., had a booth at the Chemical Exposition in New York, where he showed samples of the clays mined by the Interstate Clay Company and the Southern Ball Clay Company and the Ceylon Clay Company. Dr. Poole specializes in geological, chemical and industrial engineering and was kept busy most of the week with his own affairs and that of the Georgia Chamber of Commerce which had a display in Dr. Maynard's booth.

One of the enterprising concerns which had an attractive display at the Chemical Show was the Denver Fire Clay Co., of Denver, Colo., which included an exhibit of assayers' and chemists' supplies, school apparatus, etc.

A novel display was that of the Quigley Furnace Specialties Co., of New York, where "Hytempite," a patent composition of cement for fire brick, was demonstrated.

The Ontario Bureau of Mines, Toronto, Ont., had a mineral exhibit which was the center of attraction, showing various clays and clay products of that section. Among them were samples of clays and clay products of the Milton (Ont.) Pressed Brick Company.

The exhibit of the Miner-Edgar Company, of New York City, was devoted principally to chemical products which have been developed since 1914, and included pulverized and lump clay, washed and prepared for various uses such as paper making, and washed kaolin for porcelain, pottery, etc.

A full line of chemical laboratory porcelain, including crucibles, casseroles, evaporating dishes, concentric rings, mortars and pestles, etc., where shown at the booth of the Guernsey Earthenware Company, of Cambridge, Ohio.

The exhibit of B. Mifflin Hood Company, at Atlanta, Ga., was of unusual interest to visitors generally, but to clayworkers particularly, for it included a number of specialties which Mr. Hood has developed and brought to perfection since the war started, including acid proof blocks, rings and acid containers which are being turned out in large quantities for government use.

Table of Contents

CLAYWORKER—6-10 cms p
Uncle Sam's Dormitories....315
Recent Developments in Ceramics 317
Burning Clay Wares........320
Standard Tests of Refractory Materials 324
American Ceramic Society Holds Successful Meeting.325
Of Interest to Drain Tile Manufacturers 328
American Peat Society......325
Sewer Pipe for Rat-proof Foundations 328
The Employer and the Crippled Soldier 325
Some Shifting in Magnesite..328
Need for Bricklayers in War-Swept Country 328
A Modern Motor-driven Lime Plant 329
The Home of the American Clay Machinery Co.......330
Motoring from Coast to Coast 331
Traffic Thrills Along Lincoln Highway 331
Everything Ready Except the Roads 331
The Silica Report...........331
Influenza Adds to the Woes of Manufacturers 333
Pennsylvania Brick Man Victim of Influenza..........333
H. J. Knapp Answers the Last Summons 333
Population of the World....333
Building Permits for September 356
The Lakewood Engineering Co. Offers Valuable Service to Brick Industry.....356
Classification of Fire Brick..358
Highway Improvements for 1919 358

CORRESPONDENCE:

New York and Vicinity.....319
Pacific Coast News.........323
Seen in New Jersey........327
Advice for Conservation of Oil 332
The Minter System of Burning Brick 332
Brazil Clay Men Look with Favor on Women Workers 332
Everybody Busy at Gary...332
With the Brick Men of Southern Indiana 358
With the Cincinnati Brick Men 363

EDITORIAL:

Current Comment 350
The Good Roads of France..350
Back to Brick 350
Future Price Levels........351
Advertising 351
Second Hand Machinery.....351
Associated Common 351
Cleaning Machines 351
Editorial Notes and Clippings 355

MISCELLANY:

An Up-to-Date Brick and Tile Plant 316
A Universal Mileage Ticket..323
Shut Down, but Not Complaining 362
Liberty Loan Quota Over-Subscribed 362

INDEX TO ADVERTISEMENTS ON PAGE 364

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

required by the act of Congress of August 24, 1912, of The Clay-Worker, published monthly at Indianapolis, Ind., for October 1, 1918.

State of Indiana, County of Marion, ss:

Before me, a notary public in and for the state and county aforesaid, personally appeared T. A. Randall, who, having been duly sworn according to law, deposes and says that he is the editor and business manager of The Clay-Worker, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher, T. A. Randall & Co., Inc., Indianapolis, Ind.

Editor, Theo. A. Randall, Indianapolis, Ind.

Managing Editor, Theo. A. Randall, Indianapolis, Ind.

Business manager, Theo. A. Randall, Indianapolis, Ind.

Owners are T. A. Randall & Co., Inc., Indianapolis, Ind.; Theo. A. Randall and James E. Randall, Indianapolis, Ind.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

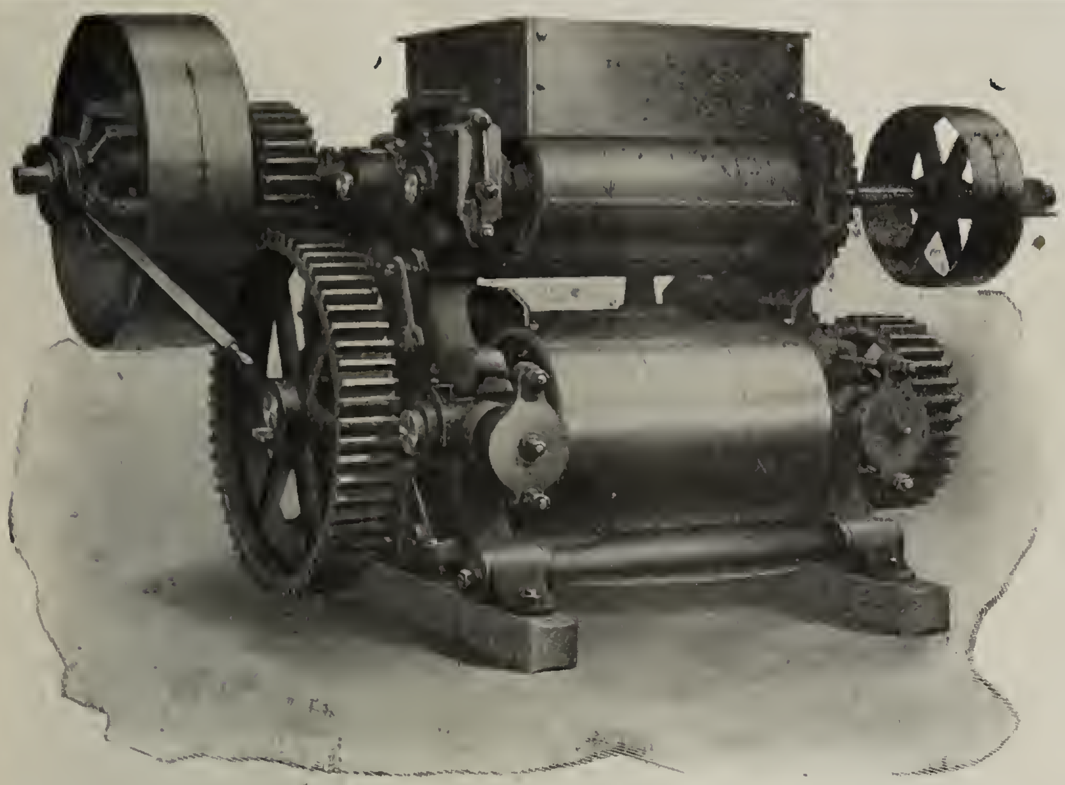
That the two paragraphs next above, giving the names of the owners, stockholders, security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) Theo. A. Randall, Editor.

Sworn to and subscribed before me this 2nd day of October, 1918. (Signed) CHRISTA A. LEWIS, Notary Public.

[Seal] My commission expires June 30, 1921.

Back the Boys Bayonets with your Bonds.



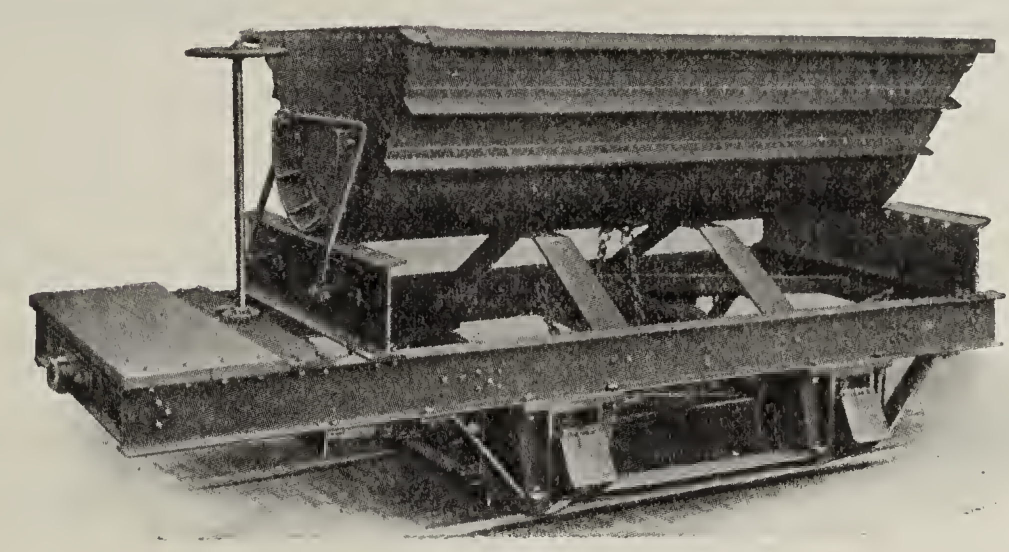
American 10 D Crusher

AMERICAN 10 D CRUSHER

The American No. 10 D Crusher, like others of the American Crushers, is designed and built to operate to the limit of it's capacity and to do satisfactory crushing and grinding at any speed within it's range. We have a bulletin giving all the details of this and other crushers. Let us send it to you without cost.

AMERICAN No. 197 CLAY CAR.

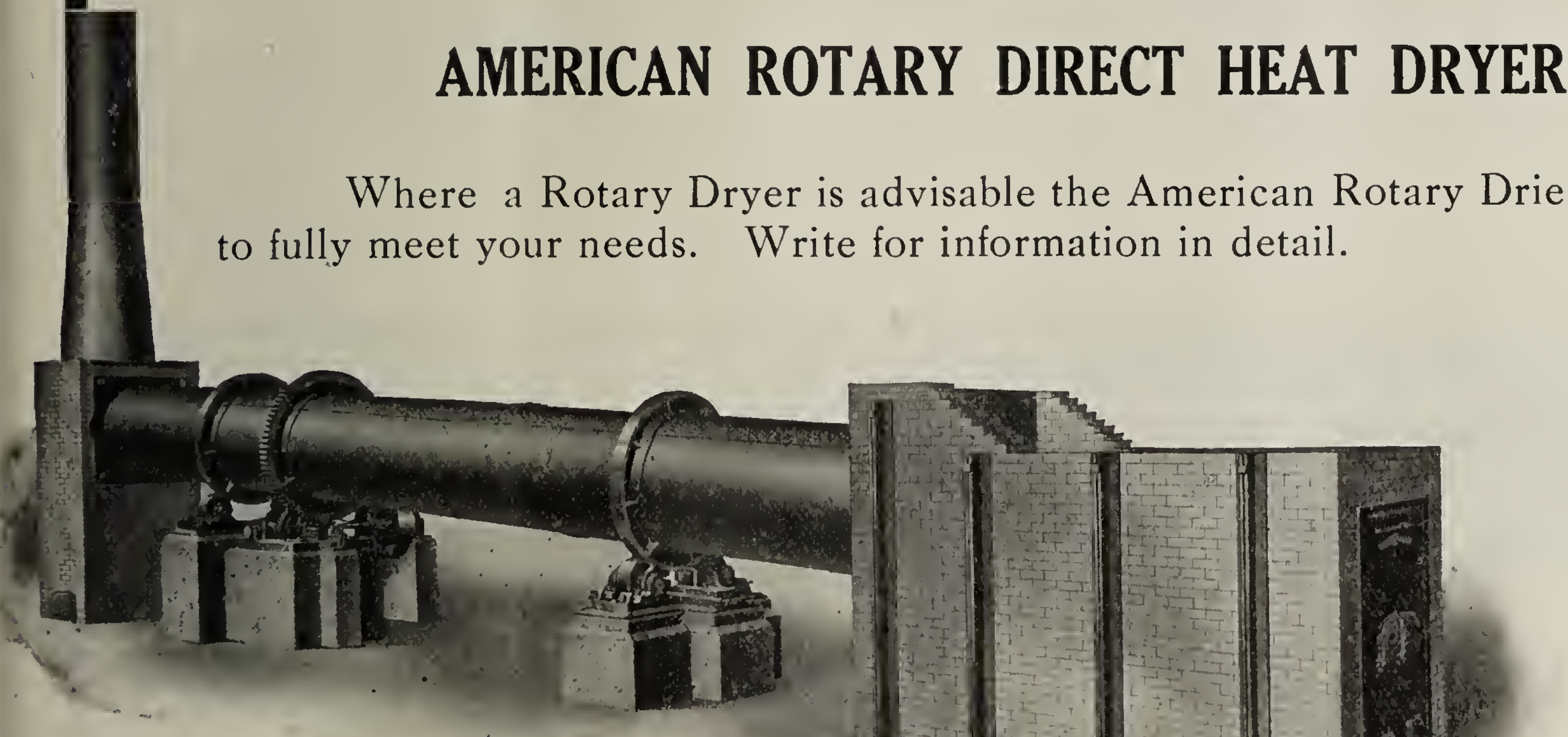
Here is a car with a quality and capacity that will satisfy you. It is one of the most substantial cars on the market and will stand the demands you place upon it. Full details for the asking.



|American 197 Clay Car

AMERICAN ROTARY DIRECT HEAT DRYERS.

Where a Rotary Dryer is advisable the American Rotary Drier will be found to fully meet your needs. Write for information in detail.



**THE AMERICAN CLAY MCHY. CO.,
BUCYRUS,
OHIO.**

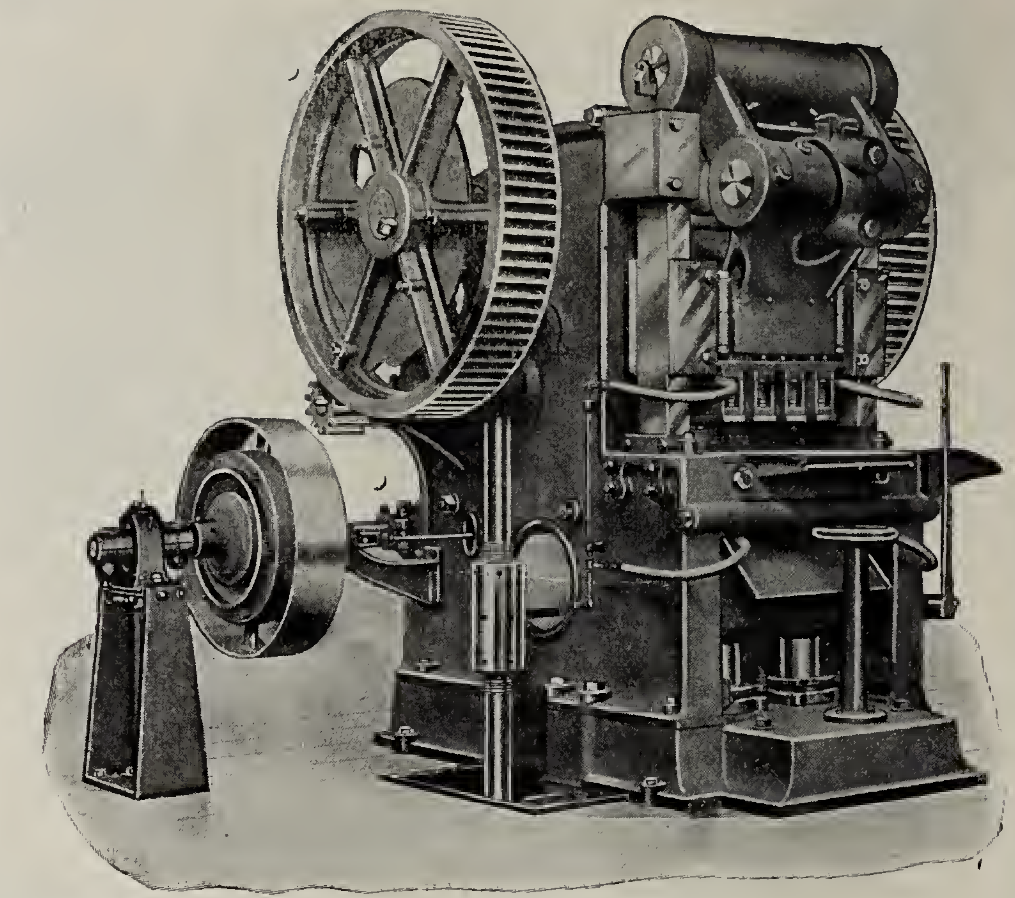
Oh say cant you see that the Land of the Free, of which your so fond must be backed by YOUR Bond.

AMERICAN MODEL C PRESS.

The American line of Dry Presses for pressed brick and Sand-Lime brick are the most substantial presses built for the purpose and are operating satisfactorilly wherever used.

The design of these presses and their superiority of construction, are elements which insure a satisfactory output and a low cost of upkeep.

We have a special bulletin on these presses which we will be pleased to send you on request.



Model C Press

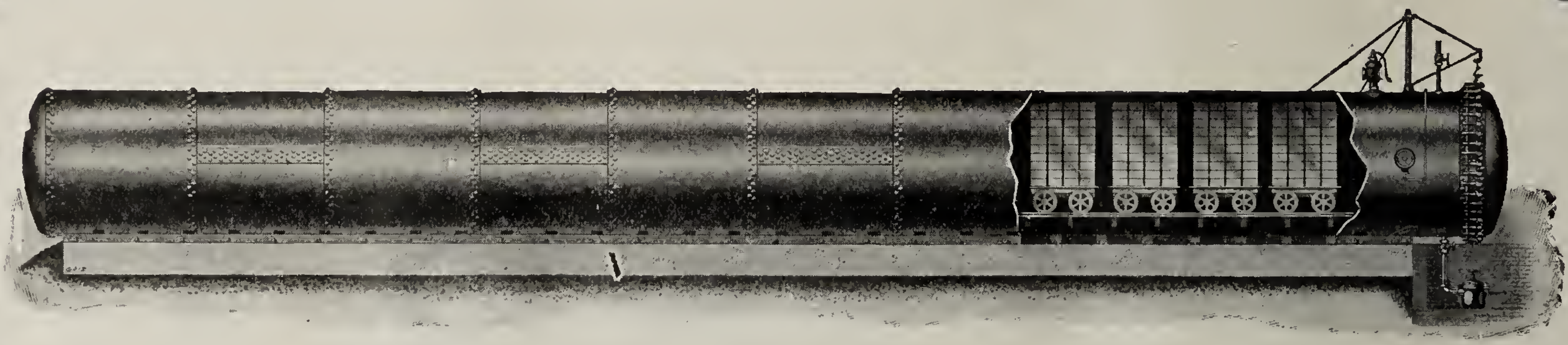
We are builders of a full line of machinery for making brick and other Clay products by all processes. Our new catalog describes and illustrates the full line, if you haven't seen a copy send for it at once as it should be on every Clayworkers desk or in his library.

The American Clay Machinery Co.

Bucyrus, Ohio

SAND-LIME BRICK MACHINERY.

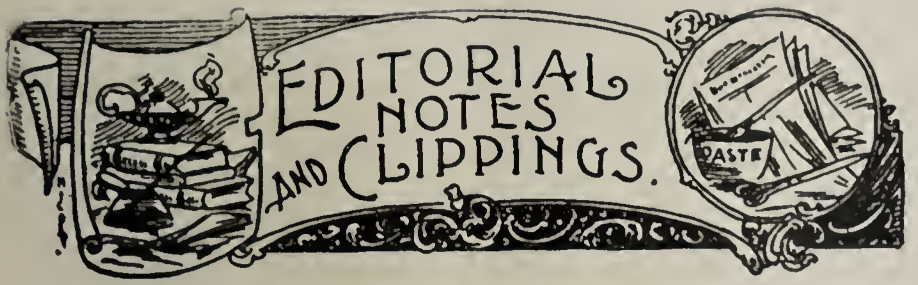
The American Lime of Sand-Lime Brick Machinery is a quality line and as such merits your investigation. The danger of failures in the manufacture of this type of brick is lessened, if not entirely removed, by the installation of proper machinery. Our engineers will assist you to start right.



Sand-Lime Brick Cylender

The American Clay Machinery Co.

Willoughby, Ohio



EDITORIAL NOTES AND CLIPPINGS.

A fire of unknown origin caused heavy damage at the plant of the Des Moines Brick & Tile Company, Des Moines, Iowa.

The Humboldt Brick Manufacturing Co., Humboldt, Kansas, is in the market for a good second-hand carrier system.

The brick and tile plant of Straight Bros., at Auburn, Iowa, has been temporarily closed owing to the difficulty in getting labor.

The entire output of the McArthur Brick Company, of McArthur, Ohio, has been taken over by the government for war work.

W. T. Croslin, of Miami, Okla., and George F. Clark, of Henryetta, Okla., have under consideration the establishment of a chinaware factory.

The stable of the United Fire Brick Co., at Dunbar, Pa., near Connellsville, was destroyed by fire recently. One horse was burned, but all other property was removed in time.

W. H. Finney is at the head of the Callaway County Clay Co., Murray, Ky., which has been incorporated with $2,500 capital stock to manufacture porcelain knobs, cleats and tubes for insulators.

An order for 500,000 brick was recently received by the Decatur Brick Manufacturing Co., Decatur, Ill., for government buildings at Moberly, Mo. The company has had a number of orders for brick and tile from the government.

The Forest Brick & Tile Company's plant, at West Forest, Ohio, was completely destroyed by fire recently. The fire is supposed to be of incendiary origin, as two men were seen to run from the plant shortly before the fire was discovered. Asa Conley, the proprietor of the plants, gives the loss as $10,000, on which there is no insurance.

M. H. Johnson, of the Terre Haute Vitrified Brick Company, Terre Haute, Ind., announces that the plant at West Terre Haute has been closed down for the duration of the war. While the company has a number of contracts for paving of streets and roads in the vicinity of Terre Haute, the action of the State Council of Defense in stopping all paving work makes it advisable to close the plant.

The plant of the Banner Clay Works, Edwardsville, Ill., where paving brick and block were formerly made, has been taken over by a new company and is being put in shape to manufacture refractory brick and shapes. The company has been incorporated under the name of the Missouri Refractories Co., with $20,000 capital stock. C. W. Terry is at the head of the concern.

The Memphis Brick Supply Co., Mr. Bishop, manager, with office in the Goodwyn Institute, Memphis, Tenn., reports that considerable brick are being used for remodeling, fireplace and mantel work, and some warehouse projects being finished up which were started some time ago. The fuel and labor situation is not very conducive to manufacturing at this period in local territory.

Judd J. Brooks, Jr., of the Harbison-Walker Refractories Co., Pittsburgh; R. D. Hatton, of LaClede-Christy Clay Products Co., St. Louis, and P. S. Keir, of the Kier Fire Brick Co., Pittsburgh, have been chosen by the refractories industry, with the approval of the chamber of commerce of the United States, as the refractories war service committee. The committee will act as an advisory board to Charles Catlett, chief of the refractories section of the chemical division of the war industries board.

Word has been received that John Wilson, formerly connected with a brick factory at Eldorado, Ill., has arrived safely overseas. He is with the United States infantry and received his training at Camp Zachary Taylor, at Louisville, Ky.

The portiton of the Hutchinson Brick & Tile Company's plant, at Hutchinson, Minn., which was damaged by fire last month, is to be rebuilt. M. C. Madsen, president of the company, states that it will be modernized on both a labor and fuel saving basis.

The new tunnel kilns of the Huntington Clay Products Company, Huntington, W. Va., have been completed and fires will be started in the near future. The company has one order on its books calling for 1,000,000 brick, in addition to a number of lesser orders.

The directors of the Illinois Brick Co., Chicago, Ill., passed the regular quarterly dividend of 1½ per cent. due in September. The company is in good condition, but the directors deemed it inadvisable to make further disbursements to stockholders during the war period.

Walter T. Madsen, who has been associated with the Hutchinson Brick & Tile Co., Hutchinson, Minn., for a number of years, has enlisted in the National Army and as he is beyond the age of men who are in training for overseas duty, is doing clerical work at Fort Snelling.

The plant of the Morgantown Brick Company, Morgantown, W. Va., which has been shut down for some time while improvements were being made, started up again the latter part of September. The improvements included a carrier for transporting the clay from bank to machine room.

The Haws Refractories Company, Hawstone, near Mifflintown, Pa., is planning to put on women to perform the lighter duties in the manufacture of bricks. It is planned to increase the product of the plant from 60,000 bricks daily to 100,000 bricks and women will have to do some of the work.

The Streator Clay Manufacturing Company, Streator, Ill., recently landed a government contract calling for two hundred car loads of sewer pipe for use at the various cantonments. The plant which had been closed down has been started again and will be kept busy on this one contract alone for some little time.

Edward Talbot, a minor, through his father, George Talbot, has brought suit against the Ohio State Brick & Stone Co., of New Lexington, Ohio, for $25,000 damages for injuries alleged to have been received while at work on the company's plant at Moxahala, when his hand was caught in the cogs of a large wheel which resulted in the amputation of two fingers on his right hand.

A number of women are being employed at the plant of the Logan Brick Company, Logan, Ohio. They take the brick from the belt that takes them from the machine and place them on the dryer cars. The only trouble the superintendent had to find with them was that they want to do more than their share. The company is turning out 75,000 brick per day and in order to keep up this quota it was necessary to put on women help.

As soon as the improvements at the plant of the Huntingburg Pressed Brick Works, at Huntingburg, Ind., have been completed the plant will be closed down until the end of the big war. G. C. Landgrebe, the manager of the company, is in the draft and has been called to the colors. Many of the brick and tile manufacturers in southern Indiana have joined the colors or sent their sons to the front to do their duty.

BUILDING PERMITS FOR SEPTEMBER.

BUILDING PERMITS, issued during the last half of September came under the ban of the War Industries Board order, prohibiting all but strictly essential construction. During the first half of the month, there was a somewhat wider scope to the character of the work. The general effect of the restriction was no doubt to lessen the volume of the building to be undertaken. In a few cities there was reported a temporary stimulation to the issuance of permits, under the mistaken impression of prospective builders that once a permit was granted by the city authorities, work might proceed without interference, but the percentage of the permits issued due to that cause was perhaps on the whole inconsiderable. In view of the sharp restrictions placed upon construction work by the Government, the showing made last month must be regarded as satisfactory. It does not include the enormous amount of construction work directly undertaken by the Government but, instead, only private work, most of it of an essential character, not only permitted by the authorities at Washington, but much of it actually urged as aids in winning the war.

As Officially Reported.

The building permits, issued in 133 principal cities of the United States, as officially reported to the American Contractor, for September, 1918, total $35,431,137, as compared with $50,724,143 for September, 1917, a decrease of 30 per cent; but a decrease of over 50 per cent, as compared with September, 1916, in which month 115 cities reported building permits aggregating $70,980,161.

Where Gains Were Conspicuous.

Of the 133 cities reporting last month, 47, or 35 per cent, show gains. The largest of the cities thus reporting gains are Baltimore and Detroit, in both of which there is a strong demand for construction, due directly or indirectly to war work. The same reason applies to most of the other cities that make favorable comparisons. At some of these, as at Camden, N. J.; Erie, Pa.; Davenport, Ia.; Huntington, W. Va.; Norfolk, Va.; Youngstown, Ohio, the Government has engaged in, or urged, extensive housing operations. In other cities, industrial expansion, due to war needs, has given a decided impetus to construction. Among the more important cities that gained last month in the building permits issued were Atlanta, Ga.; Birmingham, Ala.; Columbus, Ohio; Dayton, Ohio; Des Moines, Ia.; Duluth, Minn.; Jackson, Mich.; Kansas City, Kans.; Lawrence, Mass.; New Orleans; Richmond, Va.; San Antonio, Tex.; Schenectady, N. Y., and Waterbury, Conn. On the Pacific Coast there was a steady continuation of activity in construction work, Seattle, Tacoma, Portland, Oakland, Los Angeles and Long Beach, all showing gains, due to activities for the Government, mainly shipbuilding. The large increase at Des Moines was due to a permit for the $800,000 Millane hotel. At Camden, N. J., 100 houses for shipbuilders accounted for $312,000. The permit for a $200,000 railroad shop at Jackson, Mich., occasioned the gain there. Queens borough, New York, made a substantial increase.

In these 133 cities reporting, the total number of permits issued was 18,358, compared with 19,657 for September last year. The detailed statement follows:

City.	—September, 1918— No. of buildings.	Estimated cost.	—September, 1917— No. of buildings.	Estimated cost.	Pct. Loss.
Atlanta, Ga.	181	$377,890	183	$287,208	*31
Atlantic City, N. J.	52	42,019	79	39,787	*5
Baltimore, Md.	133	430,634	181	230,130	*87
Birmingham, Ala.	231	457,900	417	137,316	*233
Boston, Mass.	414	465,751	370	1,316,276	65
Buffalo, N. Y.	277	483,000	276	1,064,000	54
Charlotte, N. C.	14	73,475	19	17,290	*324
Chicago, Ill.	200	2,447,600	321	4,334,400	43
Cincinnati, Ohio	605	212,080	886	798,915	73
Cleveland, Ohio	843	1,565,995	1,042	3,310,075	52
Colorado Springs, Colo.	16	23,375	15	3,399	*587
Davenport, Iowa	82	105,553	68	68,015	*55
Dayton, Ohio	155	400,312	94	98,262	*307
Des Moines, Iowa	67	1,033,400	42	72,025	*1348
Detroit, Mich.	713	2,657,420	888	2,030,650	*30
Erie, Pa.	115	390,948	108	166,983	*134
Fort Worth, Texas	79	85,792	24	66,545	*28
Huntington, W. Va.	37	547,510	48	85,480	*539
Indianapolis, Ind.	437	389,519	497	663,401	41
Jacksonville, Fla.	15	74,560	40	22,855	*226
Kansas City, Kans.	20	373,150	30	100,047	*272
Los Angeles, Cal.	520	724,091	505	613,865	*17
Louisville, Ky.	69	75,044	90	80,690	6
New Orleans, La.	62	220,830	53	86,396	*155
New York City	1,512	3.610,918	1.670	7,602,999	52
Borough Queens	513	872,936	283	483,431	*80
Borough Manhattan	172	718,870	255	3,425,889	78
Borough Richmond	62	184,646	66	440,619	58
Borough Brooklyn	662	1,573,910	873	2,950,747	46
Borough Bronx	103	260,556	193	302,313	13
Norfolk, Va.	42	180,660	44	88,150	*104
Philadelphia, Pa.	424	1,062,200	578	2,252,765	52
Pittsburgh, Pa.	188	715,901	294	731,636	2
Portland, Me.	30	24,605	39	84,415	70
Portland, Ore.	603	475,951	265	184,285	*158
Richmond, Va.	63	285,570	85	95,780	*198
Salt Lake City, Utah	56	183,750	93	335,500	45
San Antonio, Tex.	203	242,680	169	120,065	*102
San Francisco, Cal.	242	795,096	306	1,137,685	30
Seattle, Wash.	1,458	1,402,510	740	441,800	*217
St. Louis, Mo.	382	306,405	572	858,162	64
St. Paul, Minn.	140	182,394	233	374,468	51
Washington, D. C.	227	242,165	282	773,640	68
Wilmington, Del.	31	62,185	75	175,194	64
Youngstown, Ohio	276	671,860	151	287,040	*134

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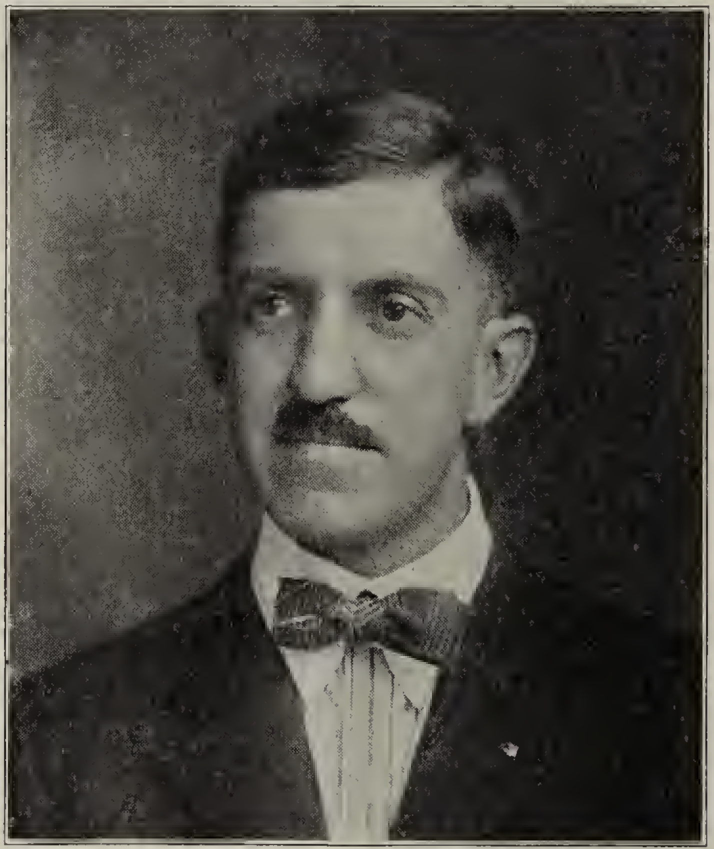
*Gain.

THE LAKEWOOD ENGINEERING COMPANY OFFERS VALUABLE SERVICE TO THE BRICK INDUSTRY.

The Clay-Worker takes pleasure in announcing the appointment of Mr. Payne G. West as assistant manager of field sales for the Lakewood Engineering Company, Cleveland. Mr. West is a graduate of Carroll College, class of 1901. He later studied civil engineering for two years at the University of Wisconsin.



Payne G. West, Cleveland, Ohio.

In 1907 he became associated with The T. L. Smith Co., of Milwaukee. During twelve years with this firm—most of which he was assistant sales manager—Mr. West thoroughly familiarized himself with all branches of the machinery field as well as with factory production methods.

Mr. West will be a valuable link in the efforts of the Lakewood Engineering Company to render a broad and intelligent service to the fields with which it is identified.

NON-WAR CONSTRUCTION.

Circular No. 21 Issued by the Priorities Division of the War Industries Board.

AS WAS MENTIONED BRIEFLY in The Clay-Worker for September, there has been a tightening down on private building operations, and the pledge which was handed to the brick industry some time ago to sell only for essential building has been followed by an arbitrary ruling which practically padlocks and hog-ties building operations of a private character. The new order was promulgated by the Priorities Division of the War Industries Board, and issued as Circular No. 21. After the preamble, which restates that familiar pledge, the essential part of Circular No. 21 one reads as follows:

"That all interested in the manufacture and sale of building materials, as well as those interested in building projects of every character, may have a clear definition of or a ready means of ascertaining the uses to which such materials may be put, and be advised of building projects which may be prosecuted during the war with the approval of the War Industries Board, this circular is issued.

"Structures, roads, or other construction projects falling within the following classifications are hereby approved, and no permits or licenses will be required therefor:

"(1) After having first been cleared and approved by the War Industries Board, those undertaken directly by or under contract with the War Department or the Navy Department of the United States or the United States Shipping Board Emergency Fleet Corporation, the Bureau of Industrial Housing and Transportation of the United States Department of Labor, or the United States Housing Corporation.

"(2) Repairs of or extension to existing buildings involving in the aggregate a cost not exceeding twenty-five hundred dollars ($2,500).

"(3) Roadways, buildings and other structures undertaken by or under contract with the United States Railroad Administration or a railroad operated by such administration.

"(4) Those directly connected with mines producing coal, metals, and ferro-alloy minerals; and

"(5) Public highway improvements and street pavements when expressly approved in writing by the United States Highways Council.

"No building project not falling within one of the foregoing classes shall be undertaken without a permit in writing issued by or under the authority of the Chief of the Non-war Construction Section of the Priorities Division of the War Industries Board.

"Should one contemplating building conceive his proposed project to be in the public interest or of such essentiality that under existing conditions it should not be deferred, then he will make a full statement of the facts in writing, under oath, and present same to the local representative of the Council of National Defense, applying to such representative for his approval of the proposed construction. Should such local representative approve the construction project, he will promptly transmit the application, stating clearly and fully his reason for approving same, to the Chairman of the State Council of Defense, for his consideration. If approved by the latter, he will transmit it to the Chief of the Non-War Construction Section of the Priorities Division of the War Industries Board, Washington, D. C., for consideration, if need be further investigation, and final decision. Should the application be finally approved by the Priorities Division a construction permit will issue which will constitute a warrant to manufacturers and dealers who have taken the pledges of cooperation above mentioned to sell and deliver building materials required in the construction of the licensed building project."

Paragraph (2) has since been amended by an addition permitting the erection of new farm buildings of which the total cost does not exceed $1,000 without permit.

It is interesting to note that this concession was secured, not by brick men, nor by a representative of the National Federation of Building Industries, but by a committee representing the retail lumber associations which went immediately to Washington and laid the matter before the board in such a manner that an immediate amendment was secured permitting the minor farm building operations without permit. The committee to which credit is due was composed of J. R. Morehead, Kansas City, Mo.; C. C. Harper, Rochester, N. Y., and A. C. Johnson, Dubuque, Iowa.

THE HOME AS A NATIONAL ASSET.

Authorities are pretty well agreed that the home is the principal asset of a nation, and history as well as statistics will readily demonstrate that the nation which has the best homes for the masses not only grows the best people, but it is the most firmly established and is in the best shape to meet and withstand any crisis that may arise.

And the home is plainly the hearthstone of democracy; it is the thing which makes this great country of ours stand out so conspicuously in the world. More people have better homes here than in any other country of the world. They are a part of the development of a free people in a great free country.

One day recently a captain of industry in speaking to a gathering of his fellows upon the Spirit of Democracy, said among other things that socially the country owes more to the building material men than to any other class of people, for they have done more to advance civilization by their enterprise in furnishing the materials of construction and encouraging people to build homes.

Now is the time for us to get this thought of the home as a national asset into the minds of the clayworking fraternity and to so connect it up with clayworking that every man in the industry will feel like going out and doing some mission work to promote more and better home building as the next great step for this country to take. Other countries have their eyes upon us now as never before. They are seeking the secrets of our progress and may be expected to grasp and use them, so we must be up and doing to continue in the lead. We must not only continue to enlarge upon our great national asset of home building, but we must get into the public mind the idea of making those homes better and more permanent than in the past.

We are at the dawn of a new era in which if the clayworking industry exerts itself as it should there will be better homes built in this country than have been dreamed of by the average man heretofore. The past has marked an era in which the idea prevailed that only the wealthy could build brick homes. The next decade should mark an era in which the modest home builder will be made to realize that he can have a permanent home, too, at no greater cost than the temporary frame that has been so conspicuous during the past twenty-five years. Those with an abundance of money will naturally turn to the best building material to be had, and the big job ahead of the clayworking industry is to convincingly inform the citizen of modest means that he, too, can build with the best, and find it more economical as well as more lasting and satisfactory.

The encouraging of better home building is an important step in the advancing of civilization, and strengthens the assets of the nation as well as makes business for the industry. Surely that is enough promise of attainment to stimulate interest and arouse the trade to action.

PLANS FOR AFTER-WAR TRADE.

The time is now ripe for more centralized, concerted work on a program of economic reconstruction after the war, says a report made public today by the Bureau of Foreign and Domestic Commerce, Department of Commerce. It is the first of a series of reports to be issued on this subject and is devoted to the plans under consideration by other countries, especially as they bear on future foreign trade developments.

"The outstanding fact under observation," states the report, "is the recognition in every land and by all statesmen of the problem called 'economic reconstruction.' But of more immediate importance is the fact that England, France, Italy, Germany and Austria are making preparations to resume their peaceful economic life, with improved facilities for foreign trade, with a national supervision of the use of natural resources for the benefit of their own citizens, and with assistance from the state."

Attention is called to the achievement of our own Government in preparing for after-war conditions, such as the building and organization of a huge merchant navy backed by large and efficient shipyards and docks, the Webb-Pomerene export trade act authorizing exporters to combine for export trade, and the leeway in foreign trade banking now possessed by the Federal Reserve Board and banking system. All told, there has been a very considerable amount of effective work done looking toward the future, but much remains undone, and the bureau is issuing this analysis of European tendencies as a guide, although calling attention to the fact that each country has its own peculiar problems that it must work out for itself.

"In England," says Mr. Cutler, chief of the bureau, in his introduction, "judging from present comments on the work of the Committee on Commercial and Industrial Policy after the war, any present attempt to lay down complete and binding policies regarding the future is now recognized as a waste of effort. What is more important is the assembling of facts, taking the basic step to improve our educational, research and promotive organizations and contributing to clear thinking as to the questions involved. Sooner or later we must have a definite program, in which work and plans for the future based on known conditions affecting our future may be co-ordinated. I personally feel that the time is now ripe for some more centralized, concerted work to that end."

The report is entitled "Economic Reconstruction," Miscellaneous Series No. 73, and is on sale at 10 cents a copy by the Superintendent of Documents, Government Printing Office, Washington, D. C., and by all the district and co-operative offices of the Bureau of Foreign and Domestic Commerce.

COMMUNITY HOUSES AS MONUMENTS.

An interesting idea being put forward by The American City is that of the erection of community houses as fitting memorials to the brave men, living and dead, who have joined the colors and given of their time and life for the sake of liberty. And it is proposed that the name Liberty Buildings be used for such structures.

There is no question but what memorials may well take on some practical form, nor is there any question but what we should erect something, many things in fact, to commemorate the greatest crusade of the world and to show our appreciation of the brave men who participated therein. And the position is well taken that these structures should be made to assist as well as commemorate.

Of course these structures mean permanence, a thing of keen interest to the clayworking industry, for it has been established that there is nothing in the way of structural material which has greater permanence than well burned clay.

The idea should furnish a fruitful theme for architectural designs and beget a series of offerings which will add new character to the architecture of the country.

FOUND IN CHICAGO.

One of the things one readily finds in Chicago is enterprise, and not the least among the enterprising folks in Chicago are the brick men. An attest of this was encountered recently during a visit to that city. The Commercial Review of one of the daily papers started off with a headline about Chicago as a brick center, making the statement that Chicago uses about a billion brick a year. This was followed by a general description of the process of common brick making as it is carried on at the Chicago yards from the digging of the clay to the handling of the finished brick. And it was good stuff, the kind of stuff that helps to keep brick before the public as the one best building material. The Chicago brick people are to be congratulated for that brand of enterprise which keeps the brick subject alive and active even when war news seemingly overshadows everything to such an extent that many a man is likely to quit and say "what's the use?" That is what was found in Chicago, a brand of enterprise that is refreshing and encouraging.

WE'VE GOT TO DO WHAT WE CAN.

Said Michael O'Leary to Patrick McCreery,
"You sure make me weary the way that you work;
Last week you lost one day, and this week—on Monday—
You laid off completely. Bedad, ye're a shirk!"
Said Patrick McCreery to Michael O'Leary,
"Well, what if I did?—and I did, it is true—
If I grab off a play-day or two around pay-day
I guess it's my business and nuthin' to you!"

Said Michael O'Leary to Patrick McCreery,
"Me son is a soldier who's fightin' in France;
He's got to have trifles like helmets and rifles,
Or else with the boches he won't stand a chance.
He needs to have batteries—guns that'll shatter his
Enemy's trenches before an attack—
And motors to carry his camp commissary
And ships that'll bring him the things he may lack.

"But when you are shirkin' yer job, or ain't workin',
You're holdin' him up on his arms and supplies;
For, get this straight, neighbor, when you slack your labor
You're doin' more harm than a half dozen spies.
Ther's need for the keenest of work—each machinist
And fireman and blacksmith should stick to the job
In war-time conditions to make the munitions
To help smash the Kaiser and all of his mob.

"And so," says O'Leary, "your ways make me weary;
You throw down me son as he fights Over There;
To loaf is a bum thing—you bet it means something
To me when you're slackin' from doin' your share!"
Said Patrick McCreery to Michael O'Leary,
"I never have thought of it that way before;
But now that I see it I sure will agree it
Ain't me that'll loaf on the job any more!"

—*American Machinist.*

Building operations have had a hard knock by the war gods, but there are some signs of revival in the air, and these deserve attention and assistance.

25% SAVING

and usually more

In Coal and in Labor

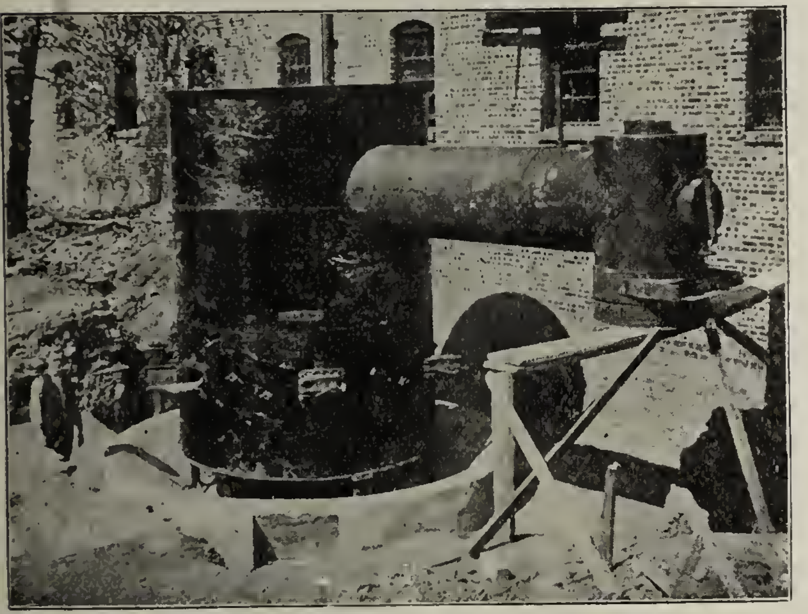
Construction of two
International Producers

Will be made by
the application of

PRODUCER GAS

to your Kilns

Whether you burn
Brick, Tile or Pottery



Construction 1-7 ft.
Producer for Pottery Kiln

INTERNATIONAL PRODUCERS

and forced Draft

BURNERS

can be adapted to your Kilns

Remember your coal troubles last winter

Write us today

International Clay Machinery Co.

DAYTON, OHIO

Written for The Clay-Worker.

WITH THE BRICK MEN OF SOUTHERN INDIANA.

TRADE WITH THE brick and tile manufacturers of Evansville and southern Indiana towns has not improved to any great extent during the past month. "We are sitting steady in the boat and biding our time," said one brick manufacturer at Evansville the other day. The brick factories in southern Indiana have not been able to operate steadily at any time since the first of the present year. While some brick has been sold, the trade has been slack compared to last year and previous years. There has been little building done in Evansville and other southern Indiana towns during the past six months, and architects say little building is being planned now for early next year. There are several large manufacturers in Evansville who for some time past have been contemplating the erection of additions to their plants, but these improvements probably will not be made until late next season, and perhaps not then if the war has not closed. It is expected work will start within a short time on the building at Dale, Ind., that will house the new bank organized in that town recently with a capital stock of $25,000.

John Andres, secretary and treasurer of the Standard Brick Manufacturing Company at Evansville, stated the other day that trade had been dragging with the brick manufacturers for some time past and that he is looking for no change for the better during the rest of the year. The Standard Company has had some nice contracts during the year, but their business has not been what it was in years that were normal. This company, as well as many of the brick companies in southern Indiana, has been handicapped a great deal by the labor shortage problem, that has been acute for some time past. The new draft will take away a great many more men and by spring it is expected the labor shortage problem will be more acute than ever. Some of the manufacturers of furniture and other lines have installed women and girls to take the places of the men who have been called to the colors, and in the event that the labor shortage becomes much more serious the brick manufacturers may be forced to use women and girls in their plants.

The Fourth Liberty Loan campaign in Evansville and Vanderburg county, that commenced Saturday, September 28, was a great success, and, in fact, more successful than any of the other previous campaigns. The quota for the city of Evansville and Vanderburg county was $6,338,000, and two-thirds of this amount was subscribed in the first three days of the campaign. Many of the brick, tile and pottery manufacturers were active and prominent in the big drive. John Andres had charge of one of the one hundred teams that canvassed the city and did such heroic work. Henry C. Kleymeyer, the general manager of the Standard Brick Manufacturing Company, was also an active worker, as was Aaron Weil, president of the Crown Pottery. Michael D. Helfrich, president of the Sanitary Pottery Company, was an active worker, and, in addition, purchased $75,000 worth of bonds in the campaign. The other brick and pottery manufacturers were large purchasers of bonds. In most of the southern Indiana towns the brick and tile men were "at the bat" in the big drive and did not cease their labors until their respective counties had gone "over the top." Since the United States entered the great world war the brick manufacturers have not faltered, but have done their full share in all patriotic moves.

The three local potteries have been operated steadily during the past several months, and trade continues good. The pottery manufacturers say they have not permitted the labor shortage and other handicaps to stop them in their operations and that they are going right ahead in spite of all difficulties.

The stoppage of public improvements in most of the southern Indiana counties has been keenly felt by the brick and tile manufacturers. Had the war not come on, many public highways in the southern part of the state would have been completed this year. In fact, most of the proposed highway from Danville, Ill., to Adams, Tenn., known as the Dixie Bee Line, has been completed, and some stretches in this road have been made of brick. Most of the Kentucky part of the road is completed and is awaiting inspection. Another highway that has been planned is the "Market Highway," that will run from Evansville to New Albany. L. N. Savage, of Rockport, is the president of the association that will have the building of this road in charge, and it is expected that as soon as the war is over work on this highway, that will mean much to the counties along the Ohio river, will be started. Another road to be built will run from West Baden, Ind., to Evansville, and this road has been surveyed and several of the counties have made their appropriation for the highway. Brick manufacturers are strong advocates of good roads, and will assist in the building of these numerous highways in southern Indiana, that are destined to greatly develop southern Indiana. The farmers within the last few years have been won over to the cause of good roads, where a few years ago they were among the strongest opponents of improved highways. Mayor Benjamin Bosse, of Evansville, is of the opinion that after the war has ended Indiana will witness more road building than she ever before experienced in all her history. Brick manufacturers are looking forward to this time, as they figure that as the years come and go, more and more roads will be built of brick, as time has demonstrated that no road is more durable and substantial than a brick road.

A. HOOSIER.

CLASSIFICATION OF FIRE BRICK.

The Clay-Worker is indebted to Mr. Charles Catlett, in charge of the chemical division, refractories section of the War Industries Board, for a copy of the tentative specifications of fire brick on which his department is at work. Mr. Catlett anticipates that the tentative specifications will be adopted and prove acceptable to the entire industry, but has requested that they be withheld from publication until they have been fully considered and approved, when they will be issued in connection with a circular from the priorities division of the War Board, which will designate which plants are entitled to be classed as "refractories" and determine where they shall be placed on the preference list. In due time a complete copy of the specifications as authorized by Mr. Catlett will be laid before our readers.

HIGHWAY IMPROVEMENTS FOR 1919.

Appreciating the immense importance of highway improvements, the United States Highway Council at Washington has asked the state highway departments and road commissioners throughout the country to submit estimates of the improvements under way and contemplated for the coming year, in order that the work of road improvements may "carry on" in the largest measure possible. With this in view, municipal, county and district engineers are requested to file statements of the improvements under way or desired during the coming season in their respective fields, with the U. S. Highway Council at Washington on or before December 10, and to class the highways under one of four heads, as follows: First, Military Importance; second, National Economic Importance; third; Unfinished Construction which cannot be safely postponed another year; fourth, Local Improvements of such urgency as to cause very great hardship if construction is delayed. That good roads enthusiast, Will P. Blair, vice-president of the National Paving Brick Manufacturers' Association, 830 Engineers Building, Cleveland, Ohio, in order to facilitate the good work has prepared suitable blanks for the occasion, and will be more than glad to mail them to any engineer or highway official desiring same.

DEPENDABILITY IN PERFORMANCE IS THE STRIKING CHARACTERISTIC OF

THE UNDERWOOD PRODUCER GAS BURNING SYSTEM

(**Patented**)

YOU CAN DEPEND UPON IT TO

Save Much in Fuel
Save Much in Labor
Give Ideal Burning Conditions
Reach Any Necessary Temperature
(2600° to 2800° is easy)
Possess a Host of Other **Real** Advantages

The above are reasons why every thinking, progressive Clayworker should investigate the system.

Moreover, every producer of Clay Products who takes into serious consideration the drastic fuel restrictions of the Government, must see in this system the one true method of burning clay products economically, and in accordance with the Government's mandates to conserve fuel.

Again, do not lose sight of conditions which will prevail after the war. Our experience now teaches us how vital it is to conserve fuel and labor, and the only way in which we can profit by this lesson is to prepare by installing dependable, economical appliances, and for the burning of clay products the Underwood system is the one best bet.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

BURNING CLAY WARES.

(Continued from page 322.)

Rectangular kiln crowns are built in sections 12 feet to 16 feet long, and usually the sections are separated by a 2 inch to 4 inch expansion space. This is absurd. The kiln wall has no such joint, and the crown will move with the wall, no more, no less. It never creeps on the wall. It will crowd endwise in the rise and may even close up the expansion joint provided, however large this joint may be, but in doing so it will crack in one or more places between the expansion joints. The large expansion joint is a provision to facilitate cracking and has no other purpose.

The crown should be in sections to avoid rebuilding the entire crown when one section requires renewal, but there should be no space between the sections, at least not to exceed ½ inch. We have seen arches 60 feet long in one section and without a crack in them after several years' use.

Where flues extend through the main wall, such as main draft flues, an opening should be provided in the wall and arched over, but the opening should not hug the flue wall too closely. A heavy clay mortar joint between the walls of the opening and the flue walls will permit the flue walls to move should they creep any, and such a joint will crush and crumble away under the expansion and movement of the flue and thus protect the main walls.

Where a stack is close to a kiln wall and connected with a long flue through the kiln we usually break the flue under the kiln wall and use a stub extension of the flue from the break to the stack to safeguard the stack. The kiln flue may enter the kiln wall opening and be broken off, then the stub flue extends from inside the kiln wall opening to the stack opening.

Half circle arches on rectangular kilns are not satisfactory. They have a marked tendency to bulge on the quarters and flatten in the center. The crown should be the segment of a circle arch with a radius that will give a rise between ¼ and 1/3 of the width of the kiln. The best crown construction is built of wedge bricks to properly turn the circle but such bricks have to be made especially for the work and are seldom available. Wedge bricks alternating with standards are satisfactory, but crowns should not be built of all standards where a heavy mortar joint is required to keep the bed joint radial.

Prof. Harrop in his kiln expansion paper previously cited calls attention to crown skew backs constructed of cut skews and built up with wedge brick, and shows that the arch thrust is greater with the latter skew than with the former, and this is the only point in his article wherein we do not heartily agree.

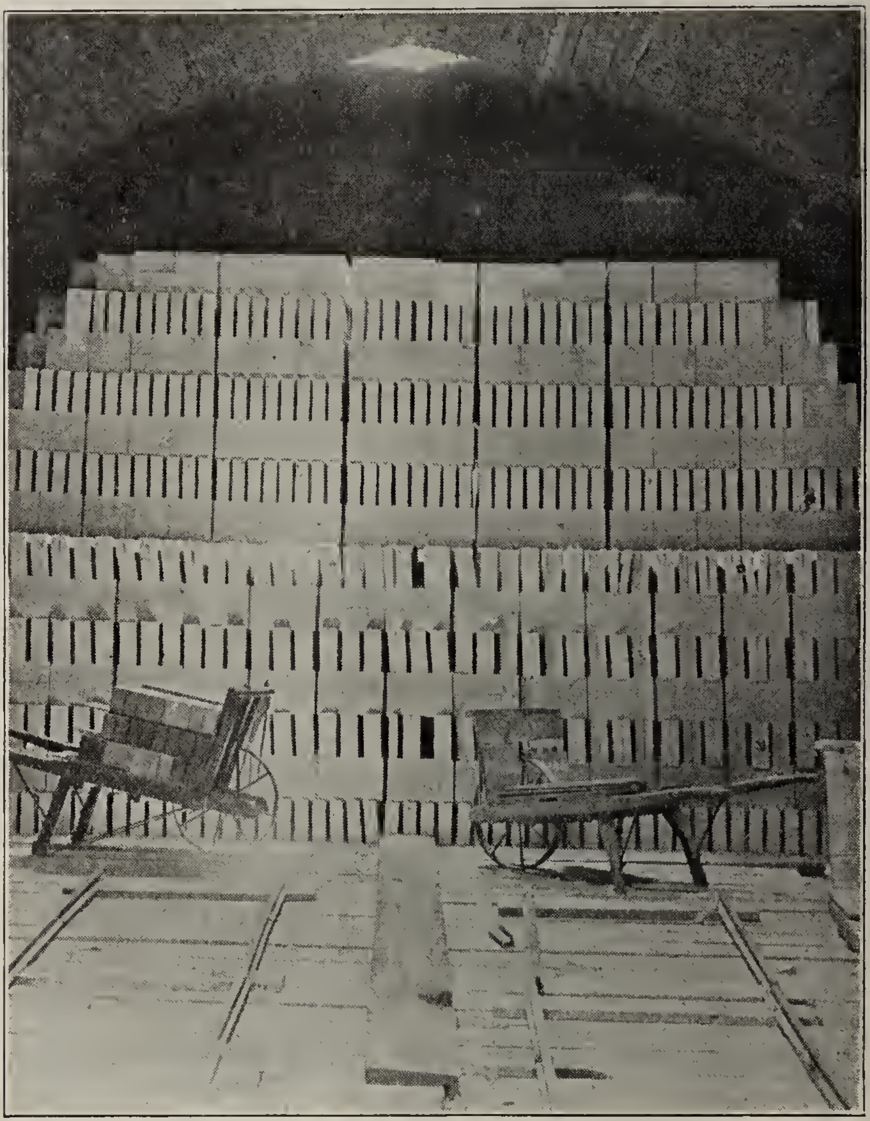
The rise of the arch is a factor in the determination of the thrust, and using the same rise for the crown circle, he has a flatter arch for the wedge skew than for the cut skew, and consequently gets a larger thrust. If we make the total kiln height the same in both cases, and lower the spring line to compensate for the higher wedge skew instead of flattening the crown circle, we will get practically the same thrust on the wedge skew distributed over a larger area. The tendency in a wedge skew is a turning movement, while that in a cut skew is to slip horizontally. In our experience we have seen cut skews forced out on the wall in many instances, but never a wedge skew.

Sand Pockets.

The under floor flue system should be arranged to provide for an accumulation of sand thus keeping the draft flues and outlets to their maximum efficiency, or provision should be made for easy cleaning. We occasionally lose a kiln of ware and the excuse is that the bottom is choked up with sand. In some yards the loss of a kiln is the signal that the bottom needs cleaning and it is bad practice. The perforated floor flues in every case should be deeper than their outlets into the draft flues, and the depth of the sand accumulation should be frequently measured to insure timely cleaning and prevent the accumulation from getting over into the covered draft flues where cleaning is impossible except to tear up the entire floor.

Kilns with central longitudinal perforated floor flues as shown in Fig. 69 and Fig. 62 are easily cleaned. In one factory, the slotted floor bricks were loose and were taken up after each burn and reset in setting the bricks. If these flues are built deeper than the openings into the draft flues as shown in Fig. 68 no cleaning will be required for a period of several months to a year.

Fully perforated floors are not so easily cleaned, and some types are particularly difficult. The latter should have ample pockets for a long period of operation.



Figue 76.

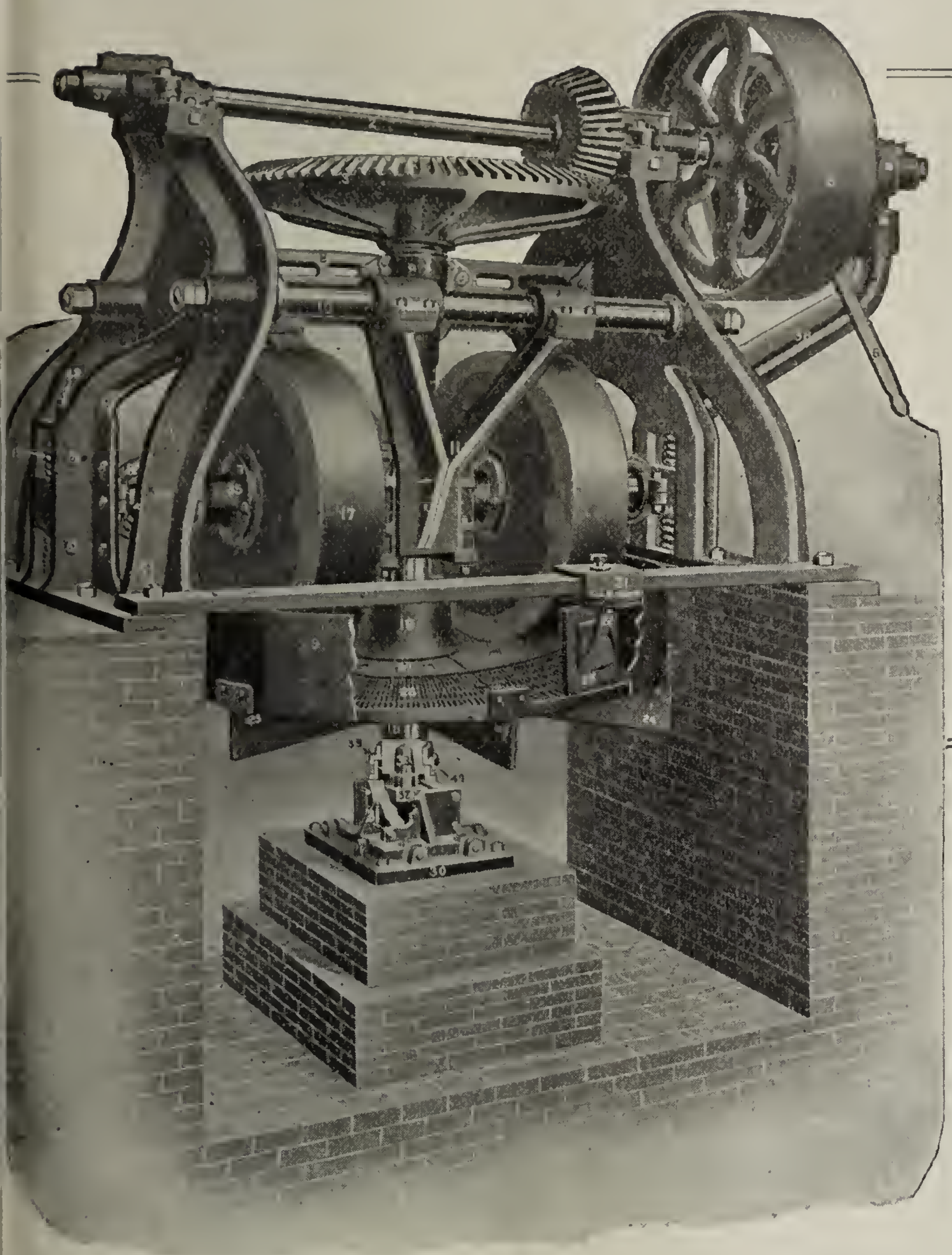
In some types, as Fig. 70, with spandrel arches to carry the slotted floor bricks, the flue may be made large enough to permit a workman to enter it from the end, and the cross flues sloped so the sand will flow down into the central flue as shown in Fig. 74. We consider such a method a last resort because the large flues, particularly the spandrel arches, are liable to get out of shape and the high feather walls to draw over, and in consequence repairs to the floor are as frequent as cleaning the flues.

Setting.

The setting in a rectangular kiln is very simple. If the bags are straight flash walls, or segments of large circles, the setting is uniform from end to end of the kiln. Square or half circle bags require that the space between the bags be filled but this independent of the main setting.

(Continued on page 362.)

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

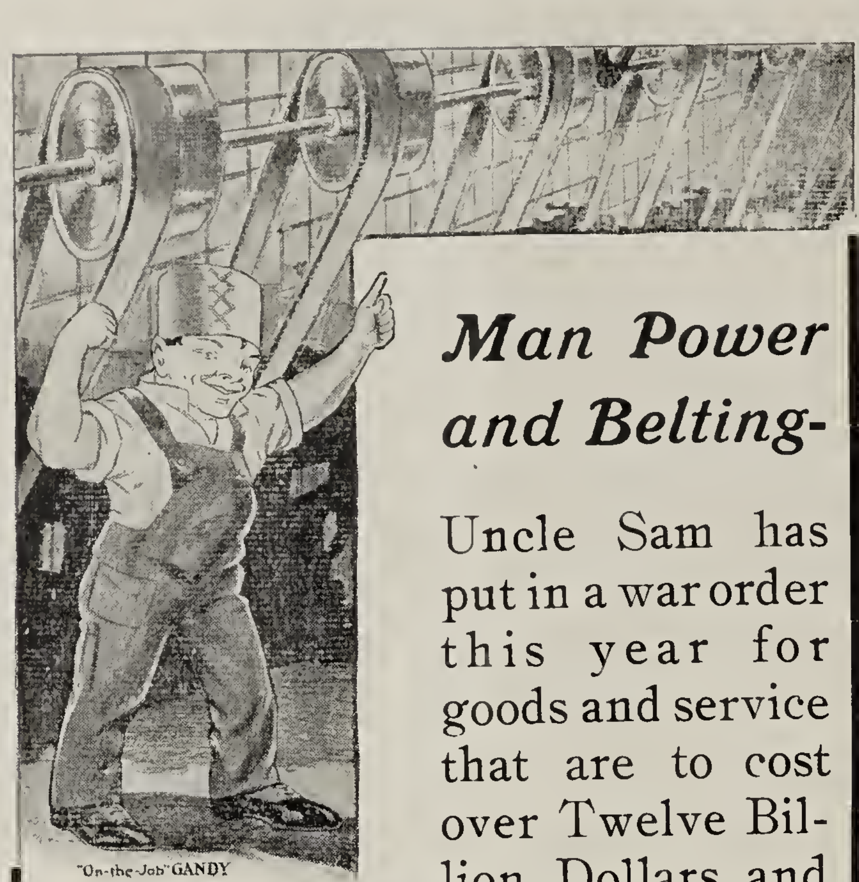
Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.


"On-the-Job" GANDY

Man Power and Belting-

Uncle Sam has put in a war order this year for goods and service that are to cost over Twelve Billion Dollars and take almost half of the nation's actual working forces to produce.

The result is going to be man-power shortage--not a single man can be spared for unnecessary work, and constantly mending or replacing belting equipment is unnecessary work.

It consumes the time of men vitally needed for other things.

GANDY Stitched Cotton Duck Belting is made to give 100 per cent service-to get *all the pull from the pulley.*

Order your *GANDY* belt from mill supply house or direct.

Our Stock and Odd Size list will facilitate quick delivery. Why not write for it today?

"On-the-Job" GANDY
Service Manager

THE GANDY BELTING COMPANY
749 West Pratt Street BALTIMORE, MD.
New York Branch, 36 Warren St.

Look for the Green Edge and GANDY Trademark.

GANDY BELT
Stitched Cotton Duck

BURNING CLAY WARES.

(Continued from page 360.)

Kilns with solid floors and limited perforated floor space must be set in such a way as not to restrict the floor outlets, and also that the spaces in the bottom courses will serve as flues leading direct to the floor slots. For example the setting on the floor shown in Fig. 69 should start with stretcher courses on the floor and they should be so spaced as to rest squarely on the slotted floor bricks in the center of the kiln.

The setting for Fig. 74 would start with headers spaced to suit the slotted floor bricks and preferably a single course.

Fig. 76 shows face brick setting and incidentally a good burn. The lower part of the kiln is set with roman bricks (1½x4x12) and the upper part with standards. The latter are set 8 on 3 and care has been taken that each column, three brick square, is independent. The bricks are perfectly faced as the illustration shows. It also shows the racking back from the top of the bags and the flash brick set on the step-backs to protect the bricks from the flame and to force the gases into the crown space.

Brick setting in down-draft kilns varies from 24 courses high to 32 courses, and the height of the kiln for such ware should not exceed 13 feet in the center. For setting 28 courses high, as shown in the illustration, the crown space in the center is about 3 feet high before the bricks are burned and on either side the bricks are about 12 inches from the crown. If the setting is lower than this the kiln should be correspondingly lower and vice versa.

Hollow ware, including sewer pipe, is set higher than bricks and the kilns for such are built 15 to 18 feet high in the center.

(To be continued)

NEW APPOINTMENT FOR HOMER F. STALEY.

Homer F. Staley, for a number of years at the head of the Ceramics Department of the Iowa State College, at Ames, Iowa, has been appointed Technical Advisor in Ceramics of the War Industries Board. Mr. Staley, who is President of the American Ceramic Society, is well qualified for this position.

LIBERTY LOAN QUOTA OVER SUBSCRIBED.

With characteristic energy, Frank B. Dunn, manager of the Fourth Liberty Loan campaign in Conneaut, Ohio, laid his plans for the campaign so effectively that his town went "over the top" in the first day. Conneaut's quota was $355,000, and at the end of the first twelve hours $384,000 had been subscribed by 4,100 persons. This is a record to be proud of, and we congratulate Mr. Dunn on his achievement.

SHUT DOWN BUT NOT COMPLAINING.

In a recent letter, Fritz Salmen, of the Salmen Brick & Lumber Co., Slidell, La., says: "Our brick yard has been shut down for more than two weeks, as under the ruling of the War Board very few brick are required in this section of the country. However, we are not complaining, for if this sacrifice has to be made in order to help win the war we are more than willing to acquiesce."

NAPOLEON'S POSE EXPLAINED.

Probably the cooties, like the tactics, are much the same in any war. An Eastern Yank writes home that he knows now why Napoleon always had his picture taken with his hand inside his shirt.—Kansas City Star.

Written for The Clay-Worker.

WITH THE CINCINNATI BRICK MEN.

THERE IS NOT very much incentive for building with war, Liberty bonds and restrictions. The clay men, therefore, have to abide by the conditions over which they have no control and make the most of the situation. Cincinnati is making a great campaign for the sale of Liberty bonds, and is going to do her part in this drive to make a fine showing, as she has done in the past. All other considerations aside from winning the war have been cast afar. This is the spirit, and the clay manufacturers and dealers are going to help.

A committee has been appointed, composed of the following, to aid the War Industries Board in its labors to save building material, and in this way to release men for essential war work: Walter J. Friedlander, Charles J. Livingood, George W. Harris and Col. William Cooper Proctor. In connection with its work the committee has adopted the following resolutions:

"1. That no residence, additional alteration or repairs costing to exceed $2,500 shall be allowed during the period of the war.

"2. That the board shall work in conjunction with the building department of the city of Cincinnati, and all applications made there which apply to these requirements will be referred to this board for approval or rejection.

"3. Blanks prepared by the National War Industries Board, which will be available here within the next few days, must be filled out by any person desiring to erect a building or to make repairs or alterations costing to exceed $2,500.

"4. Anything required by the government will be given a permit and priority orders will be issued in connection therewith.

"5. Requests for the erection of all other buildings will be given careful consideration by this board and the application decided on its own merits.

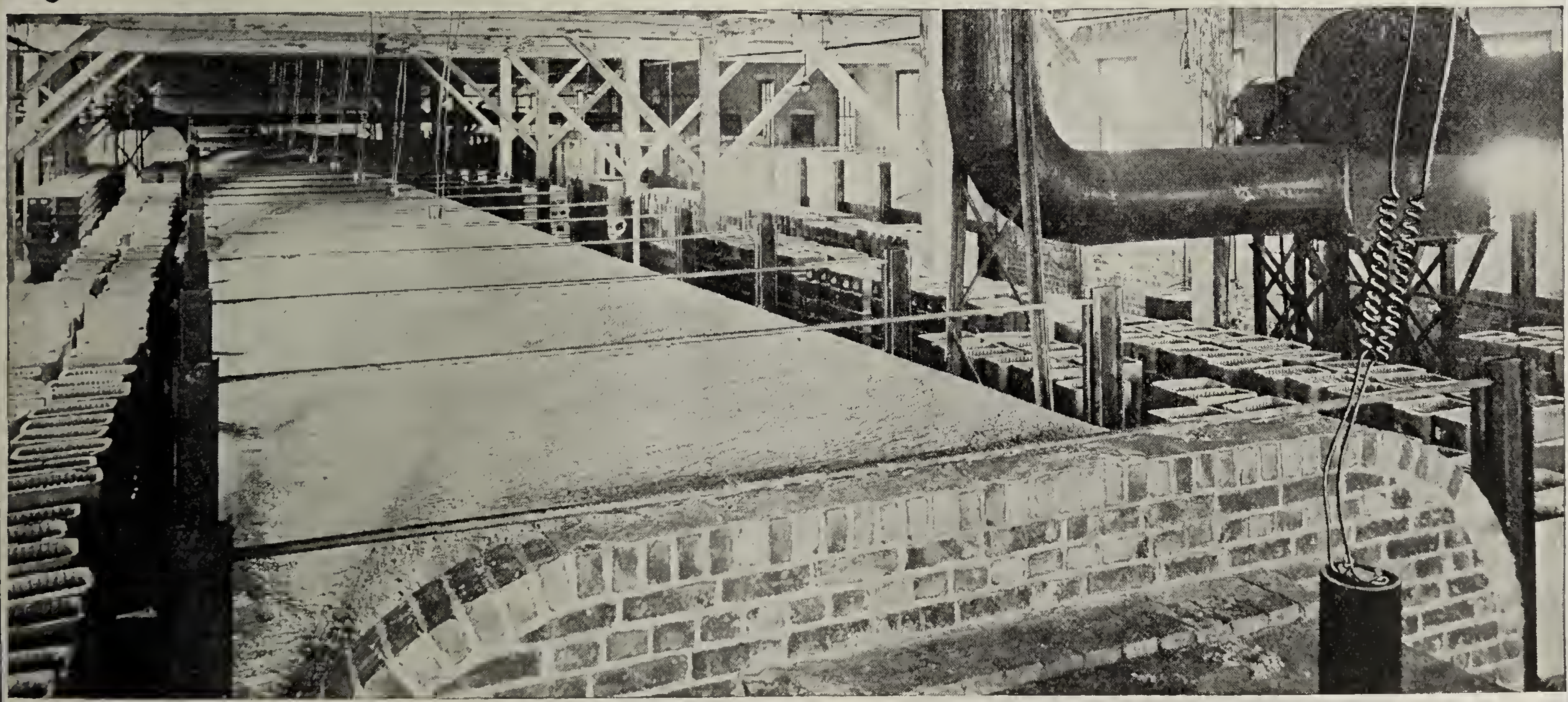
"6. Bona fide farmers actually engaged in producing crops and other farm products in Hamilton county may make improvements not to exceed $1,000 in cost, without a permit from this board."

There was a decided decrease in the number of building permits issued here for the month of September, as is shown by the figures issued by the building commissioner. There were only 605 permits issued, with an estimated cost of $212,080. In 1917 the same month showed permits for $798,915, and for the same month in 1916 the amount was $862,080.

Beecher E. Hess has succeeded H. Serkowich as secretary of the Cincinnati Face Brick Club. Mr. Serkowich resigned some time ago to become a lieutenant in the U. S. Navy. Mr. Hess, who has been identified with several civic and commercial organization as secretary and assistant manager, has been made manager of the retail merchants' and trade expansion departments of the Cincinnati Chamber of Commerce, the position that was formerly held by Mr. Serkowich. He is a resident of Oxford, Ohio.

Work on the nitrate plant at Broadwell, now known as Ancor, near this city, is progressing favorably. As some of the buildings are being builded with brick, the government has already awarded a contract for two million common brick. This order has been subdivided among five of the plants in this section, so that the brick can be delivered promptly. It is sure that other contracts will be let later, and this is a help at this time, when the brick plants are having a hard road to care for, with only limited orders.

Arthur W. Riggs, of the Brick Sales Co., who joined the forces of the Y. M. C. A., war work some time ago, was in the city recently and left for Camp Taylor, Ky. CINCY.



Brown Pyrometers

On Tunnel Kilns

Fifteen Brown Platinum Thermo-couples in each kiln, see illustration! Two Indicating Pyrometers with 15 point switchboards and Continuous Recorders! That is the temperature control of the American Encaustic Tiling Co., Zanesville, Ohio, on its up-to-the-minute Dressler Tunnel Kilns. This Brown equipment, they write: "is indeed essential in following kiln operation."

Find out what a Brown Pyrometer equipment would save you. Write today to The Brown Instrument Co., Philadelphia, or to any of their district offices in New York, Pittsburgh, Detroit, Chicago or St. Louis for complete information.

INDEX TO ADVERTISERS

Alton Brick Co.................... 310
American Clay Machinery Co.. The......................353. 354
American Process Co............ 371
Anderson Foundry & Machine Works......................... 304
Arbuckle & Co.................. 305
Baird Machinery & Mfg. Co...... 384
Ball Engine Co.................... 307
Barr Clay Co., The.............. 310
Books for Clayworkers 376
Bonnot Co., The.................. 299
Boss, John C...................... 364
Brewer, H. & Co.................. 379
Brown Instrument Co., The..... 363
Caldwell, H. W. & Son Co....... 367
Cameron Clay Products Co..... 310
Carnell, George.................. 371
Chambers Brothers Co.......... 313
Chase Foundry & Mfg. Co........ 384
Chattanooga Paint Co........... 368
Chicago Brick Machinery Co,... 384
Chisholm, Boyd & White Co..... 302
Danville Brick Co., The.......... 310
Dennis, F. W...................... 367
Dickinson, W. W. Jr............. 312
Didier-March Co 301
Drying Clay Wares.............. 373
Eagle Iron Works............... 371
Eastern Machinery Co., The.... 375
Engelhard, Charles............. 369
Fate, J. D. Co., The 383
Flint River Brick Co............ 382
Frost Mfg. Co., The.............. 331
Freese, E. M. & Co.............. 380
Gandy Belting Co................. 362
Geijsbeek Engineering Co....... 369
Hamilton & Co., W. E........... 270
Harrington & King Perforating Co............................. 300
Important Federal Laws........ 370
International Clay Machinery Co. 357
Kushequa Brick Co.............. 310
Kushequa Keramic Co........... 310
Lake Shore Shale Brick Co..... 310
Lakewood Engineering Co...... 384
Lovejoy, Ellis.................... 374
Mantel, Tile and Grate Monthly. 367
Manufacturers Equipment Co., The............................ 359
Marion Machine Foundry & Supply Co.......................... 364
Mathews Gravity Carrier Co.... 300
Mayer, C. P....................... 311
McAvoy Vitrified Brick Co...... 310
Medal Paving Block Co.......... 310
Metropolitan Paving Brick Co.. 310
Mittler Wire Mfg. Co............ 370
Murphysboro Paving Brick Co.. 311
National Paving Brick Manufacturers' Association............. 310
Ohio Galvanizing & Mfg Co., The 370
Parker-Russell Mining & Mfg. Co. 368
Phillips & McLaren Co........... 367
Potts, C. & A. Co................. 377
Purington Paving Brick Co..... 311
Ricketson's Mineral Paint Wks. 364
Roessler-Hassslacher Chemical Co., The........................ 368
Schurs oil Burner Co...... 364
Standard Dry Kiln Co., The.... . 314
Steele, J. C. & Sons.............. 298
Stevenson Co., The............. 361
Terre Haute Vitrified Brick Co.. 311
Thwing Instrument Co.......... 370
Tile Underdrainage............. 310
Toronto Foundry & Mach. Co... 371
Wallace Mfg. Co.................. 378
Webster & Kincaid.............. 372
Westinghouse Electric Mfg Co.. 306
Williams, C. K. & Co............ 368

SEE TABLE OF CONTENTS ON PAGE 352.

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Use either waste heat or exhaust steam.
No live steam. No direct firing.

BOSS SYSTEM OF BURNING BRICK

Applies to all types of kilns and will save HALF in your cost of burning.

Let us save Time and Money for you

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are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.

Why Not Insist on Having Them?

They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.

Red, Brown, Buff, Purple and Black.

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Tempers Clay Perfectly—Improves Product—Speeds up Plant

Will help you get full capacity out of your dry pan, pug mill auger—insure a regular delivery to your off-bearers, and also cuts out labor of two men.
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NOTICE!
TO
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FOR
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AND
BETTER COLOR
BURN OIL
AND USE
SCHURS BURNERS

THE CLAY-WORKER

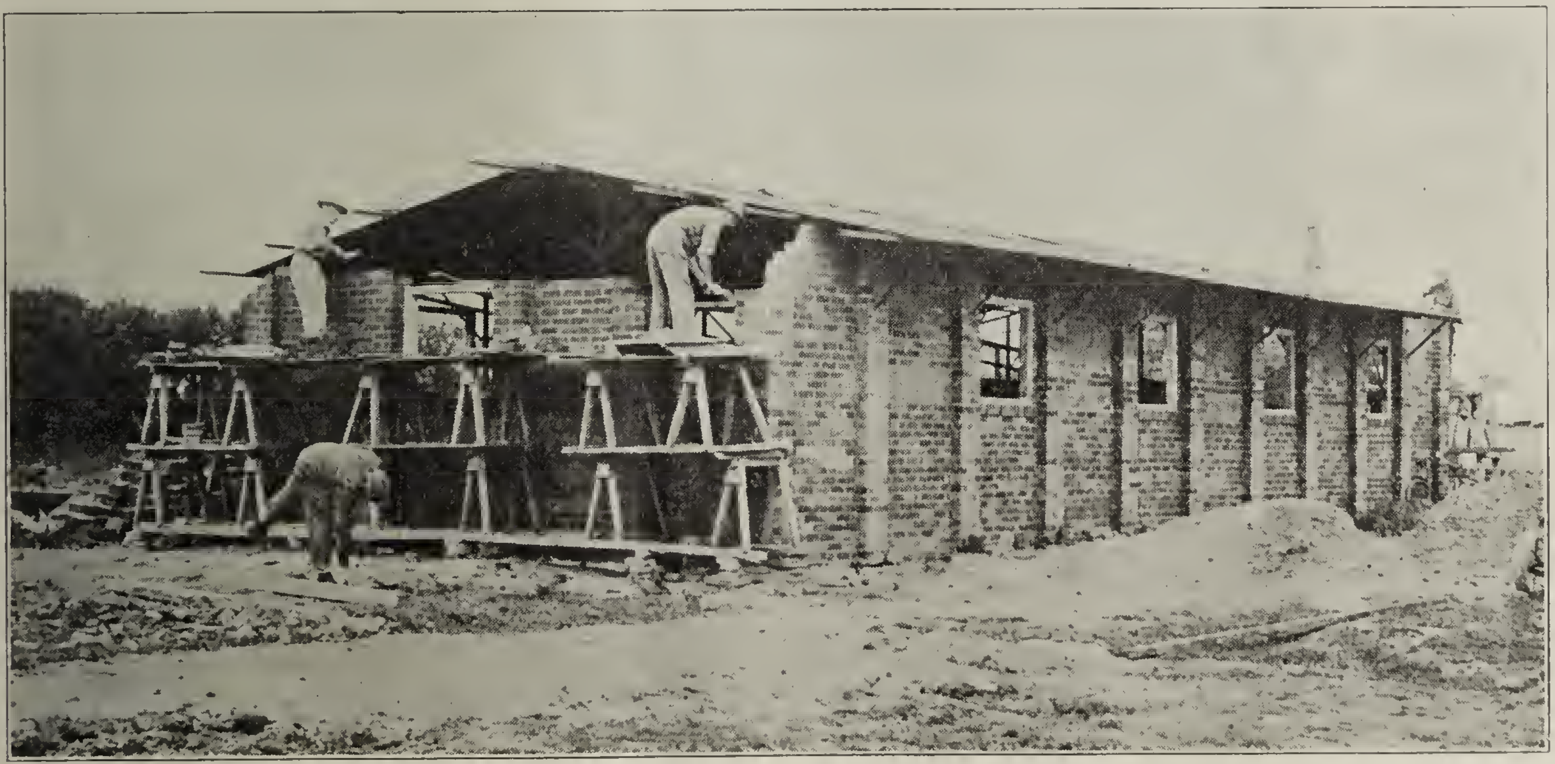
The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. LXX. INDIANAPOLIS, IND., NOVEMBER, 1918. No. 5.

BRICK CONSTRUCTION "OVER THERE"

AMERICA'S SOLDIERS Under The Auspices of American Red Cross Build Permanent Structures of Brick "Somewhere in England," Including Hospitals, Bath Houses, and Rest Camps, all the Work being Volunteer on the Part of Uncle Sam's Boys.

WE KNEW FROM the calls of the War Department for bricklayers last summer and from the published news reports that something in the way of brick construction was in contemplation "Over There" with our expeditionary forces. And there has been considerable speculation as to just what and how much in the way of brick construction was to be done. Now the story is beginning to filter across; we are beginning to learn something definite about the part brick and bricklayers have been playing in the great enterprise. And it gives one a thrill of pride to contemplate the things that have been done and the way they have been done. There is nothing new in the matter of brick construction being done over in the war-torn countries, but there is something new in the idea of young America going to those older countries, where brick was being used when America was discovered, and doing brick work which promises to stand as a monument to America long after the last soldier has returned from the great Crusade for Liberty so triumphantly finished.



Bath Houses at One of the Largest American Camps in Great Britain. The American Red Cross Knows that Plenty of Good Bath Houses Are One of the Requirements of the American Soldier and is Supplementing One Large Central Bath Building with Smaller Bath Houses Such as Shown in the Illustration.

We expected construction in France, back of the line and at supply centers, and it is evident that big things were done there, too, things of which we will learn about in time, but who thought that our boys would do monumental things on their way over there? Yet it is just that which we now have a pictorial story of through the courtesy of the American Red

Cross Department of Information, at 40 Grosvenor Gardens, London. And the story illustrates the organization and leadership enterprise of the American Red Cross, as well as the up and doing qualities of the young manhood of America.

The pictorial story in hand centers around work done in England by our soldier boys while "resting," some by those who stopped over a few days in England on their way to France, and some by those recovering from sickness and wounds.

The most pretentious building in the rest camp group "somewhere in England" is that of the Red Cross 300-bed hospital, which is classed as the finest thing of its kind in England. The reports at hand do not indicate where the brick for this work came from, but it looks as familiar as if it had all been taken bodily from some of the late showings in our own country. Perhaps this is partly because our boys made use of the scratched or raked-out joint, and introduced here and there "soldier" courses and other decorative features characteristic of their home towns. Anyway, there it is, a fine job, done by American soldiers who have taken a great pride in their work, and have made of it a job that we here at home can be proud of, too.

Not so pretentious in appearance, but just as interesting, nevertheless, is an incinerator and sterilizing plant built in connection with the hospital. This, we are told, was designed by an American soldier patient, and erected entirely by volunteer labor from the convalescent soldiers in the hospital. One of the shining examples of how our boys employ their idle time under the direction or at the suggestion of the Red Cross. Truly they have lent a helping hand as well as a fighting arm.

Another fine example of our boys doing things while they "rest" is found in the brick bathhouses at the rest camp in England. There is a large central bath building, which is supplemented by a number of smaller buildings, all built of brick and the work done by volunteer labor from the men who come into camp fresh from America for a "rest" of a few days before going across the channel to France.

These buildings, and the fact that they and many others "over there" are built of brick by American soldiers give an impressive air of substance and solidity to our great crusade across the water. They certainly will serve to dispel any lingering idea of rawness and superficial froth about the American expedition. They are a proof of a thoroughness comparable with the snap and enterprise which put our great army across the water, with all its needs supplied, in record time.

The clayworking industry should find room for pride and a great measure of satisfaction in the fact that when our boys come marching home there will be among the marks left behind them these monuments in the form of brick construction.

Another thought which we wish we could impress upon the minds of our Government officials having to do with structural work. Would it not be a good plan to do more building here at home of a permanent character? Instead of the frame shacks that dot the national capital and most of the cantonments throughout the land, would it not really have been much better to have built of brick, even where the buildings were intended for use only during the war period? Would not Uncle Sam have profited by emulating the fine example of our English cousins and using permanent, dependable brick? They would be usable, as good as new, practically, for permanent structures when the hurly burly of war is done, for be it remembered brick is the one indestructible building material. The Red Cross has done much invaluable missionary work. May we not hope that she will send back to us our Sammies to spread the gospel here at home of better construction and send re-echoing throughout our land our own slogan, "Build with Brick?"

The American Red Cross Bathing House Constructed of Attractive Brick Well Laid by our Boys Over There

Courtesy American Red Cross.

WHAT THE RED CROSS IS DOING.

America is adjusting the claims of humanity. Wherever that humanity is in need or suffering—and need and suffering are well-nigh universal just now in Europe, Africa and Asia—America is playing the part of the adjuster. The adjusting consists of service to humanity—feeding the hungry, housing the homeless, nursing the wounded and ill, bringing comparative happiness where sorrow reigned.

The American people have given with a generous heart, disproving the old assertion that as a nation we worshiped the almighty dollar. We have given more than $325,000,000 for service work, the stewardship being vested in the American Red Cross, which has spent most of this money for the purpose for which it was given. The balance will be used for similar purposes.

The Red Cross is not a charitable organization. It is an organization of service, when service is needed. With all its altruistic aims and actions, it is yet eminently business-like. Its accounts are audited by the War Department, and every January 1 the Secretary of War makes an annual report to the Congress. How well the finances of the Red Cross are managed is shown by the fact that during the recent war fund drive more than $176,000,000 was pledged and collected at a cost of less than one-half of one percent of the total.

So far this year more than $106,000,000 has been spent by the Red Cross. Of this sum, more than $71,000,000 will have been expended in France by the end of the year, $20,000,000 in Italy and fully $12,000,000 in the United States. The Red Cross is now operating in France, Britain, Belgium, Italy, Greece, Siberia, Roumania, Serbia, Palestine, Madeira, and, of course, in the United States. It cares for Americans imprisoned in Germany and Austria. It is the connecting link between our men overseas and their families at home, and vice versa. It looks after the welfare of the families of men in service. It is an organization of materialized Christianity.

This 300-Bed Hospital Recently Completed "Some where in England" was Erected by Volunteer American Solder Labor

Courtesy American Red Cross.

Up to June 30 the Red Cross had spent $15,453,049 for the care of American soldiers in France; $7,855,031 for base and other canteens and rest houses; for hospitals, $3,102,807; model Red Cross health center, $1,000,000; contribution to the French Red Cross, $3,500,000; general relief in Italy, $7,938,683; appropriated for Italy to cover the period to December 31, $12,000,000; other foreign relief work, more than $14,000,000.

In the United States $9,051,824 was spent for camp service to June 30; for medical-hospital work, $978,647; sanitary service, $495,800; miscellaneous service, $1,340,825.

Among the services rendered by the Red Cross was the shipping of 10,140,406 pounds of milk to France for its babies. Every month there is shipped 1,000,000 yards of sterilized gauze, 75,000,000 cigarettes, 1,200,000 pounds of jam, 1,500,000 packages of chewing gum and 40,000 pounds of ether. To date 231,302,022 surgical dressings, 8,203,120 packages of hospital supplies, 1,134,401 blankets, 2,689,000 pairs of socks, 1,187,000 sweaters, 10,123,374 knitted articles, 10,637,201 hospital garments and 1,106,877 refugee garments have been sent overseas.

This, in brief, is some of the service of the Red Cross. The work is expanding daily as the number of our soldiers abroad increases. It is expanding daily as territory is recaptured and inhabitants are repatriated. Everywhere in war-torn Europe there is misery and want. The stewardship of the Red Cross demands that it do all within human power to alleviate this suffering.

And even when peace comes the service will not be finished. Europe and its peoples must be rehabilitated. Reconstruction of devastated areas—rebuilding of wrecked homes—rebirth of a continent must be supervised and aided. All this will require that the American people—the only ones able to do this service for humanity—place their shoulders to the wheel.

The Red Cross needs the united support of the people to continue its service. With that end in view it will hold its second annual Christmas Roll Call during the week of December 16 to 23. This roll call is to be an attempt to obtain universal membership for the Red Cross, which shall constitute a reconsecration of the whole American people, an inspiring reassertion to mankind that in this hour of world tragedy, not to conquer, but to serve and succor, is America's supreme aim and object.

Last year 22,000,000 adults and 8,000,000 children took the pledge to uphold the flag, that the peoples of the world might attain liberty and lasting peace.

HAD HIS FULL SHARE OF TROUBLE.

M. E. Gregory, of the Brick, Terra Cotta & Tile Co., of Corning, N. Y., writes that the truth of the old adage "It never rains, but it pours," has recently been demonstrated. First the influenza hit his plant organization full force, more than two-thirds of the men, from the superintendent down, were afflicted, two of them dying. Then just as things were easing up a little at the plant, his son George who entered Michigan University at Ann Arbor in September developed a bad case of appendicitis which resulted in an operation. The young man is now out of danger and his father feels he still has cause for thankfulness.

Profit sharing is a good idea that will probably be made use of much more in the future than it has been in the past.

THE COMING DAY.

THE FEELING is perhaps universal throughout the clayworking industry that a new day is dawning for this industry as well as for the country as a whole, a day in which clay products will come into much wider use and in which the industry will prosper and grow as it never has before. Also there is a general realization that we should in some way be prepared to enter into this new day with a clear vision of what is before us, and to be ready individually and collectively to make the most of the opportunities it will open up.

We know, among other things, that for brick, hollow tile, drain tile and the various other products to make the headway they should in this new day there must be ways and means devised for keeping them favorably before the public. This means advertising, and advertising in its broad interpretation covers a multitude of activities varying in their degree of importance and differing widely in their manner, but all contribuing to the one end of making the product widely and favorably known.

Another thing that we need to realize along with this is the need for prompt action. There is said to be coming a period of readjustment in which we may expect, for a time at least, declining values. Now it is pretty generally admitted that the best support for declining prices is increased demand. When the demand can be increased the evil of price-cutting is diminished. Moreover, it is a better remedy any day than any effort at price regulation through any common agreement or through curtailing output. It follows logically therefore that any industry which can increase the demand for its product is in much better shape to carry on than one which cannot.

There is hardly an industry in the country with more room before it in which to expand and enlarge the demand for its product than the clayworking industry. Plainly, therefore, the main factor in the problem of the coming day is that of how we may best set about the work of enlarging the demand. That is, what work is it we can do which may be fruitful of good results and how shall we set about doing it?

As stated above, it is in the large sense a matter of advertising and selling. There are many activities which may be entered into both by individual manufacturers and by all combining through associated effort for some of the more pretentious and widespread work. And right here it is time to introduce an idea that some one else has offered. That idea is that no selling stratagem is more effective than the offer to give technical instruction in the correct use of the product.

This brings us squarely up to the question of training bricklayers and of interesting the youngsters of the country in the use of brick, tile, sewer pipe and all the clay products that may enter into use about the home or farm. And this is the biggest factor in the whole problem, the one outstanding factor, the solution of which will make the way easy for big things in the clayworking industry in the coming day.

It is a factor, too, that reaches out wider and covers more than the training of a larger army of bricklayers in vocational or trade schools. These schools are a good starting place, and great things within themselves, of which we should make much more than we have in the past, but they are only a part of the program that should be undertaken if we are to have clay products as widely used as they should be.

To get an illustrative example as an aid to understanding on this point, let us turn to lumber and the workers in wood. From the time a boy is big enough to crawl around and notice things he has wood and tools for working wood put before him. He has building blocks in his baby days; later comes the boy's tool box, with its saws, hammers, auger bits, screwdrivers and other things to encourage him to get acquainted with lumber and learn to work or shape it into things he may desire. The result of all this is not only an army of carpenters running up to nearly a million in this country, but every boy and man in the country can make use of lumber in constructing something he wants.

In the foregoing we have one of the potent reasons why, when a man wants a new hog house or poultry house he turns to lumber. He is familiar with lumber, and generally has had enough training with tools that he can be his own carpenter in the erection of many of the simpler structures about the place. Now, with this in mind, think what it would mean if every farmer was as much his own brickmason as he is his own carpenter. If he could go to town, get his brick and build his own chimney flue he would also soon be doing other structural work in brick, and in time many of the buildings on the farm and around the home now made of lumber would be built of brick, hollow tile, and probably roofed with burned clay.

And one of the odd things about it all is that it really takes less training and less skill to work with brick than it does to work with lumber. The real carpenter, cabinetmaker and wood finisher is a more thoroughly trained and highly technical man than the brickmason. True, not all who can use a saw and a hatchet, some of whom pass as carpenters, come under this head. But the untrained carpenter can only do simple work, and a man equally trained and familiar with brick should be able to do the same simple construction in brick.

The question is, what can we do to bring about the thing visualized here? There are really two questions here: one of how we may train more young men and increase largely the army of professional or journeymen bricklayers, and the other of how we may get to practically every boy of the country the rudiments of bricklaying, so that he will not only have a friendly acquaintance with the product, but will be qualified to do some of the simpler jobs of construction himself. When we get the full answer to that question we will have the biggest factor of all in the problem of the future of the clayworking industry.

Various plans suggest themselves for advancing this idea. If the clayworking industry as a whole would create a fund and employ a squad of teachers and instructors to work through the country systematically, say along with the county agents of the agricultural departments, great good might be accomplished. Getting to the public schools and interesting the boys of school age might help, and the establishing of free schools to give a series of lessons in bricklaying would return good interest in time. In fact, there are many branches and lines of effort which might be profitably followed, both by individual manufacturers in their own community and by the industry as a whole.

Some enterprising manufacturers have already been doing some good work along this line, especially in the way of encouraging the farmer to be his own mason in the building of simple structures. The mission work here so far has mainly been through the use of pamphlets and printed matter. This is good, too, and we need more of it. Then we need to have it followed by personal work and direct contact through some means or other.

In short, the time is here for the clayworking industry to get in closer touch with the general public and get that public better acquainted with clay products and how to use them. If this is done as it should be, the coming day gives wonderful promise for progress in the clayworking industry.

It may be advisable to put off some street paving, but surely good road building should be pushed right along.

ALL RESTRICTIONS TO BE REMOVED SOON.

Under date of November 13, the United States Fuel Administrator, H. A. Garfield, issued an order in which the amount of fuel allowance for brick, block, sanitary ware, roofing tile, floor and wall tile and terra cotta was increased from 50% to 75% for year 1918. Hollow ware and drain tile was raised from 75% to 87½% for 1918. Stoneware was raised to 92½%. In effect 7:00 A. M., November 14.

THE country is rapidly changing from war to peace conditions, and it will be but a short time until the clay products manufacturers will be working on the old basis and turning out immense quantities of ware. Big times are in store for all the various lines of clay work. It is now up to every individual plant owner to see to it that he puts his house in order to take advantage of his opportunity when good times return for a long, long visit.

Clay products manufacturers are vitally interested in what is going to happen during this reconstruction period. The opinions of influential men and the business developments of the time are "straws" that foretell progress.

Regarding the government restrictions and the prospects for the immediate future, the following letters and statements are very convincing.

All Restrictions Removed Soon.

From our Washington correspondent, under date of Nov. 12.

The War Industries Board has this morning issued a statement removing all restrictions against the use of brick or other building materials in the construction of "farm and ranch building structures, roadways, and plant facilities for railroads, railways, and other public utilities, and the construction, maintenance, improvement or development by federal, state or municipal authorities of highways, roads, boulevards, streets, etc., including water, sewerage, light, power and street railways." I was told at Judge Parker's office that within a few days all remaining restrictions would be removed.

Industry in Comfortable Conditions.

Taken by and large, industry enters the period of readjustment in comfortable condition. Corporation reports show earning power and asset values that will prove a bulwark of strength in any lean periods. America is a creditor nation; it is the richest nation in the world today; it is the only nation whose productive capacity has not been impaired by long drain for war purposes. America industrially must triumph and in triumphing cannot but bring wealth and work, wages and comforts to her 102,000,000 inhabitants.—Boston News Bureau.

New Construction Work Without Federal Permit.

In the list of construction work now permitted to be carried on without federal permit are: all farm and ranch structures; buildings or other construction work by railroads or water transportation companies; highways, roads, streets, bridges, and parks by federal, state or municipal officers; public utility construction or extension of plants engaged in producing, milling, refining, preserving, refrigerating or storing of foods and feeds; school houses, churches, hospitals costing not more than $25,000; and all other buildings costing not more than $10,000.

Important Statement by Chairman Baruch.

"For some time to come, government contracts must continue on a large scale. This circumstance applies to a considerable share of present contracts. There is to be a gradual lifting of restrictions and curtailments imposed upon industry by the exigency of the war, so as to allow as promptly as possible free flow of all supplies into peace channels. The War Industries Board will continue to exercise its functions until the peace treaty is signed, to the end that readjustment of the matters on which it has been acting may be made in as orderly a manner as possible. The whole effect of the readjustment plans will be to the end of bringing about necessary changes with as little dislocation as possible and the full opportunity for all to benefit as in the past by individual ingenuity, vision and fair dealing."—Chairman Baruch, War Industries Board.

English Publisher Makes Pertinent Comment.

"In the last four years the business men of Great Britain have learned more concerning the importance of building good will through advertising than they did in forty years preceding the war. British manufacturers who have not a dollar's worth of merchandise to sell, whose entire plants are employed on government work, are keeping their advertising continuously before the public, because while they are perfectly willing to turn their profits over to the government, while they are perfectly willing for the sake of winning the war to have their factories commandeered and their normal business completely stopped, yet they are not willing to sacrifice their good will; they are not willing to have their names or their products forgotten."—From an address in New York by Mr. Val Fisher, London Publisher.

Plenty of Business.

"It looks as if any nation which does not handicap itself should have all the business its busy people can handle for a decade after peace comes, helping the whole world become prosperous, and without any warrantable conflict of national interest that should mar international good will."—The Americas, published by the National City Bank of New York.

Labor Conditions Will Improve Rapidly.

The work of returning the soldiers to their former civilian status in industrial life has been turned over to the Department of Labor. As the able soldiers return to their former labors and men recently employed in government work are released, the labor situation on clay plants will again become normal. Bright days are ahead of us, and clayworkers should equip their plants and be prepared to meet the great demand for clay products.

Boosting Time is Here.

Now is the time to place the merits of your products before the eyes of prospective customers. Use local and county papers. Place effective exhibits where they will be noticed. The country should be placarded with "Build with Brick," "Pave with Brick," and "Drain your Farm" signs, that the industry may again come into its own.

CHEMISTRY AND CLAY.

Progress in clayworking is pretty closely associated with chemical research, and through the stress of war needs some great work has been done along special lines of which we will now soon be hearing about, and from which the industry will profit permanently. Let us commend the good work and those who had a part in its doing, but don't let us stop at that; let us take it as an inspiration to further and broader efforts in the chemical research line, for the way to greater things lies through chemistry and mechanics.

Won't it be a grand and glorious feeling when we can say good-bye to restrictions and shake off a lot of that fettering red tape?

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXXI.

Round Down-Draft Kilns.

THE ROUND DOWN-DRAFT KILN is more widely used than any other type, and not without reason.

The furnaces are uniformly spaced around the outer periphery of the kiln, and each controls a sector of the kiln area. The idea is that the greatest mass of the ware is nearest the source of heat, and, as the distance from the latter increases, the mass to be burned decreases to the vanishing point in the center of the kiln. In practice, however, the operation does not carry out the sector idea. The hot gases rise from the bags around the inner wall of the kiln into the space between the ware and the crown, then pass downward through the ware.

Other reasons for the wide use of the circular kiln are:

(1) Lower initial cost per ton capacity.

(2) Simple and efficient banding.

(3) Less mass in the kiln construction relative to the capacity tonnage and also proportionately less radiating surface, thus reducing the heat losses.

(4) Greater substantiality and in consequence less upkeep cost.

(5) Advantages in setting several lines of wares.

A circle incloses a greater area than that of any other form having a circumference equal to that of a circle, and it follows that the mass of brickwork in the kiln and the wall surface relative to the area will be a minimum in circular kilns. A single band encircling the kiln wall suffices to hold the kiln together, although additional bands are desirable, and it is evident to any one that a spherical or spheroidal crown is less liable to distortion than a circular segment.

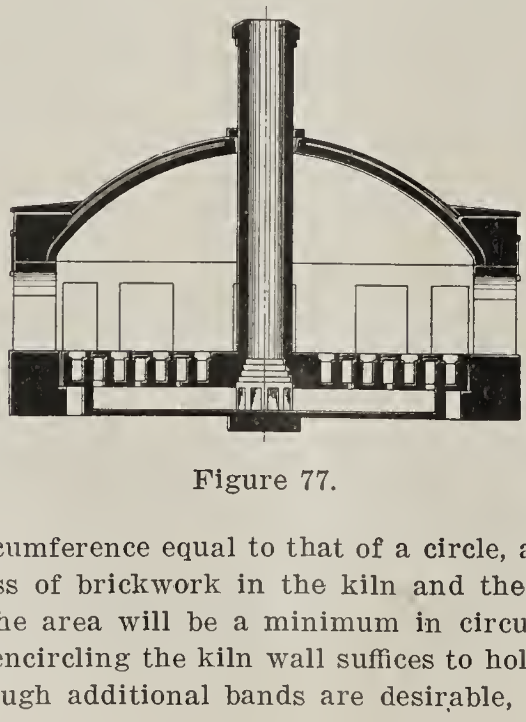


Figure 77.

The advantages in setting undoubtedly are frequently important factors in the selection of the round kiln. Sewer pipes, for instance, are set in a circle because the large sizes must be handled with a crane, and preferably should be equi-distant from the furnaces. The spaces between the bags ("pockets") are filled with smaller sizes—4-inch to 10-inch, preferably 6-inch to 8-inch sizes, which have less tendency to topple over than the 4-inch and which will stand more severe burning treatment than the 10-inch. Inside this circle will come two rings of 6-inch to 10-inch sizes as a shield for the larger sizes. Then follow the large pipes in one or two rings, finishing the center with such sizes as can be set by hand.

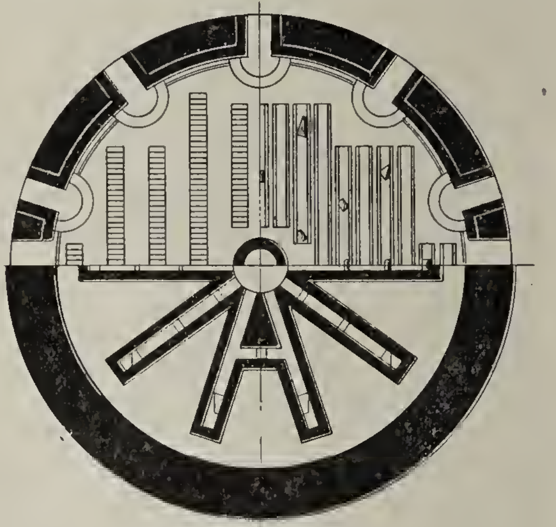


Figure 78.

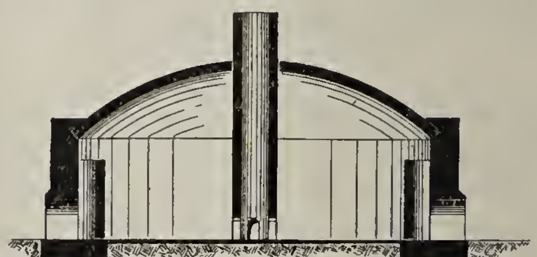


Figure 79.

Drain tile are similarly set, especially where large sizes are manufactured, but smaller sizes are frequently set in parallel benches as in rectangular kilns.

Bricks are often set in circles, although this is less convenient than in the straight benches. The advantage of the circular setting is that, if the benches of bricks are liable to roll, as frequently happens with high-shrinkage clays and those having short burning range, they cannot carry other benches with them, because circular setting distributes the tendency of the movement radially in all directions and checks it.

Pottery kilns are built in circular form—in the up-draft type to get better distribution of heat around the ware, as well as up through the center, and also for uniform burning of two or more kinds of ware, since each ring is subjected to the same heat conditions; in the down-draft because of the center stack, which is the most popular type of down-draft pottery kiln.

Muffle kilns are preferably circular because of the greater substantiality of the crowns, and the center-stack type, which necessitates a circular form, is widely used.

The problem of uniform draft conditions is more easily solved for the circular kiln bottom than the rectangular.

We have called attention to the advantage of a rectangular kiln for car setting, namely, that two tracks may be laid in the kiln, thus keeping a loaded car at the working face, whereas, in the round kiln the empty car must be switched out before a loaded one may be brought in, and the setters are idle during this switching period. If the switching takes one minute for each car the setters will be idle one hour per day in setting 30,000 bricks. This can be partially overcome if the yard arrangement is such that the cars may enter from one side of the kiln and leave from the other. There will be no interruption in the work except in filling the center space. A small advantage of this arrangement is that the cars are parallel with the setting face instead of end on.

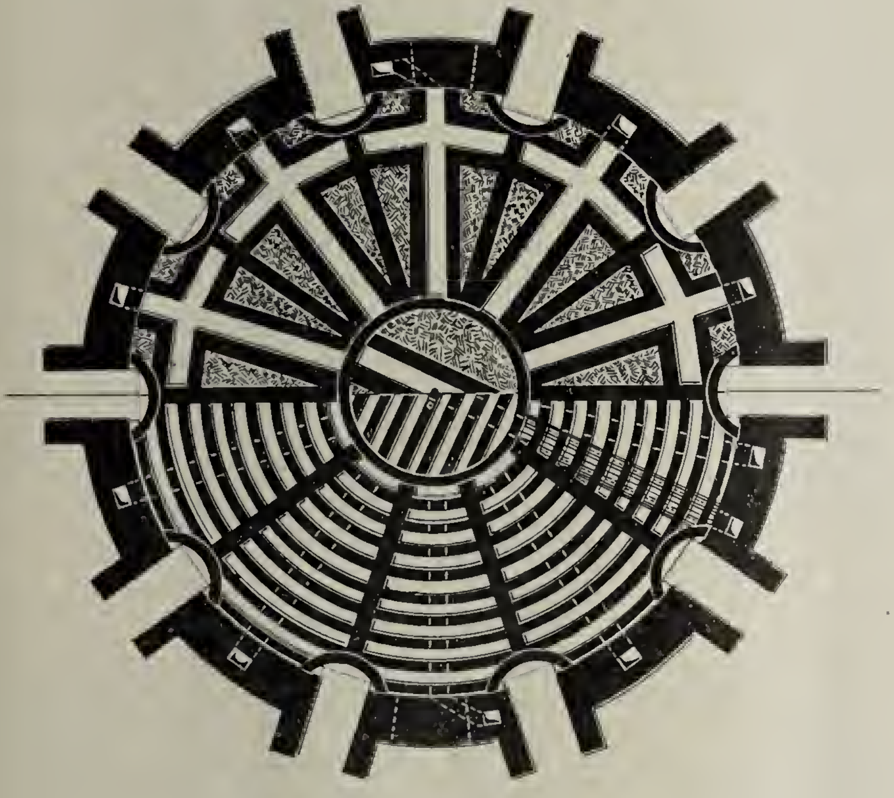


Figure 80.

Another disadvantage of the round kiln for car operation may be mentioned. In a rectangular kiln the car of ware is always at the setting face and alternately on each side of the center of the kiln, thus being in very close touch with the work, while in a round kiln the maximum distance of the car from the setting face is half the kiln diameter, and whether the ware is tossed or carried the labor cost is increased.

Types of Round Kilns.

We frequently distinguish kiln types by the stacks, as center stack, multiple wall stacks, multiple stacks outside the walls, and quite as often designate the type by the kiln bottom, as center well, radial flues, ring flue, cross-head flue, etc. The "and-so-forth" includes many kilns with distinct flue arrangement—a number of them good, but which have not found wide enough use to give them a name.

We will not attempt to follow the development of the round kiln, but instead will simply present a few of the better known types, without taking up the numerous modifications which have been designed and patented as improvements upon the original, except such modification has features, in our opinion, worthy of mention.

General Construction of Kiln Bottoms.

The kiln bottom in general has three sets of flues:

(1) Perforated floor flues.
(2) Collecting flues.
(3) Main draft flues.

The collecting flues may be on the same level as the perforated floor flues, with connecting openings in the division walls, or they may be under the floor flues, with connecting openings in the division diaphragm. Some kiln bottoms have the flues all on the same level, being merely a system of open work over the entire bottom.

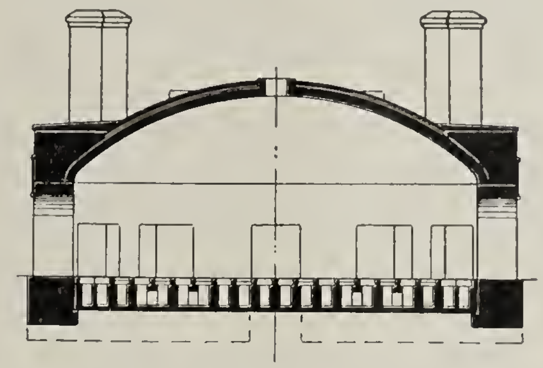


Figure 81.

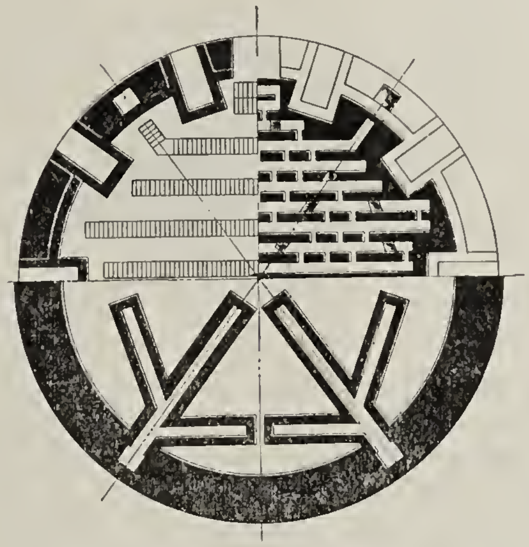


Figure 82.

Center Stack Kilns.

The center stack type of kiln, illustrated in Fig. 77 and Fig. 78, is widely used in small brick and tile plants, and, with modifications in the floor, is recommended for pottery. It also is extensively used in muffle kiln construction.

The floor shown in the illustrations is semi-perforated and especially adapted for bricks. The perforated floor flues are adjacent to and parallel with the collecting flues and the latter have outlets through their floors into the under radial flues leading to the stack. The floor and collecting flues should be deep enough so that the connecting openings in the division walls (not shown in the illustrations) need not extend to the bottom of the flues. This forms a pocket for sand in the bottom of the perforated floor flues, and if the slotted floor blocks are taken up occasionally and the pockets cleaned out, no sand can get over into the parallel collecting flues nor into underlying radial draft flues. If the slotted floor blocks are set loosely they can be easily removed and replaced, and it is a small matter to keep the flues clean.

For tile or other hollow ware the floor should be fully perforated, which requires that the collecting flues should have slotted floor blocks as well as the perforated floor flues. For this type of floor the floor flues may be a series of concentric circles. The fully perforated floor eliminates the sand pockets, but by making the flues deep and protecting the draft outlets by bridge walls on each side of each outlet we get sand pockets between the outlets. Then if we use solid instead of slotted blocks in the floor immediately over the draft outlets, the sand cannot get into the under radial draft flues.

The advantages of a center stack are:

(1) Low stack and low construction cost.
(2) Strong draft early in the burning.
(3) Uniform draft conditions.

The objections are:

(1) Kiln space taken up by the stack.
(2) Interference of the stack with the setting.

The first objection is of small moment. In some wares we have difficulty in getting the center, and the stack occupies this space, thus shortening the time required to burn, or in the same time we get a more uniform burn.

The second objection is serious in many operations, especially where care are used to bring in and remove the ware. It is of no consequence, however, for ware carried by hand or on trucks or barrows.

A simple center stack kiln for common bricks is shown in Fig. 79. The kiln has a solid floor, upon which is built the center stack, with openings in its base. The bricks are set with flues corresponding with the stack openings. In this way what ordinarily constitutes the kiln bottom becomes a salable product, and the fuel expended in heating up the floor is applicable to the ware, thus reducing the cost per ton; in other words, it increases the capacity of the kiln without increasing the size or the amount of fuel and labor required in the burning.

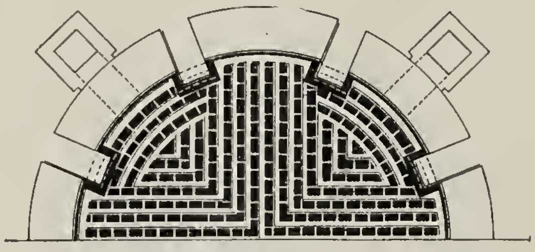


Figure 83.

Multiple Stack Kilns.

The Eudaly kiln has been more widely used than any other individual kiln, perhaps, because it was introduced at a time when there were fewer types from which to choose, but it had merit and was a distinct advance over the average kiln in use at that time. It was built both round and rectangular, and its chief competitor in round kilns was the center-well kiln, largely used in sewer pipe manufacture. The Eudaly kiln is illustrated in the lower half of Fig. 80.

The bottom is divided into sectors corresponding to the furnaces, and each sector is controlled by an individual wall stack. The central ring of the kiln is also controlled by a separate wall stack, connected with the ring by a blind flue. The feather walls are circular and are stepped over the radial centers of the sectors to form flues to the several stacks, and all being on the same level, the bottom is shallow compared with that of a center well type or any type with a double set of flues. The floor is fully perforated, or was in the earlier installations, which was considered essential for proper heat distribution.

There have been many modifications of the Eudaly kiln, to get a more substantial bottom, or a semi-perforated or solid floor, but the credit for the wide use of this type of kiln belongs to Mr. Eudaly.

The upper half of Fig. 80 illustrates the change from a Eudaly floor to a semi-solid floor. If the kiln was small in diameter, only the radial flues were needed for the perforated floor, but where the diameter was large, lateral flues were extended from the radial flues, forming a broken ring flue.

A multiple stack kiln of a distinct type is shown in Fig. 81 and Fig. 82. There are four stacks, which may be in the wall or outside, and from each of these a branching draft flue controls one-quarter of the kiln. Above the draft flues are the perforated floor and collecting flues for brick setting, but, as previously noted, this type of floor may be readily changed to a fully perforated floor.

The radial branches of the draft flues extend nearly to the center of the kiln and control the center and intermediate area, while the lateral branches cover the circumferential ring. A ring flue could be used instead of the angled branches, but it would require a right turn, whereas as the angled branches have an obtuse turn the draft in the three branches will be more nearly equal in consequence. Perfect adjustment of the kiln is possible by changing the sizes of the several openings from the collecting flues into the draft flues.

The Hook down-draft kiln bottom illustrated in a view plan, with the perforated floor removed, in Fig. 83, is unique in its arrangement and in the practical uniformity of the draft in such a simple plan. The illustration shows the entire flue system, and the flues shown are covered with perforated floor blocks. The feather walls are checker work except the top course. The circular feather walls in front of the stack serve as baffles where the draft would be the strongest, and by proportioning the checker work and varying the openings in the top floor, a uniform draft is claimed for the entire floor area.

(To Be Continued.)

IN FLANDERS FIELDS.

In the September issue of The Clay-Worker, we published the poem "In Flanders Fields" which was written by Lieutenant-Colonel John McCrae, of the Canadian Expeditionary forces in France. His death occurred in Boulogne, France in January, of this year. His poem is generally considered the finest lyric produced since the beginning of the World War. We give below the answer, written by C. B‘ Galbreath, which voices the great spirit of America which has led our boys in khaki over 3,000,000 strong to offer themselves in the cause of Freedom. This answer, like the original poem has been widely published, but the two will always stand out from the general line of war poetry.

In Flanders Fields.

[An Answer by C. B. Galbreath]

In Flanders fields the cannon boom
And fitful flashes light the gloom,
While up above, like eagles, fly
The fierce destroyers of the sky;
With stains the earth wherein you lie
Is redder than the poppy bloom
In Flanders fields.

Sleep on, ye brave. The shrieking shell,
The quaking trench, the startled yell,
The fury of the battle hell
Shall wake you not, for all is well.
Sleep peacefully for all is well.

Your flaming torch aloft we bear,
With burning heart an oath we swear
To keep the faith, to fight it through,
To crush the foe or sleep with you
In Flanders fields.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF EVANSVILLE AND SOUTHERN INDIANA.

THE GENERAL OPINION of brick manufacturers of Evansville is that trade is going to get a whole lot better after the first of next year and that 1919 will be a much better year than 1918. Many of the brick plants in southern Indiana continue to run on short time, while some of the factories have been closed down off and on for several months. Manufacturers says that they are "sitting steady in the boat" until the world settles down once again on the basis of peace when there is going to be a great deal of building and that a general era of prosperity will strike the United States. General trade conditions in Evansville and near-by points are good and as one well known manufacturer at Evansville expressed it the other day, "the business of the whole country is on a mighty sound basis, considering these are war times."

John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, reports that trade has been fair for the past month and that his company is expecting a big trade as soon as building operations open in the leading cities of the country. Mr. Andres is an optimist and believes that the country is going to enter a great era of prosperity, following the war.

Word was received at Evansville a few days ago that C. L. Powell, who was with a Canadian contingent in France had been wounded in action and is now in a base hospital in England. Powell formerly was employed at the Helfrich Pottery at Evansville and left Evansville shortly after the great war started, going to Canada in order to get into service. So far as is known he has no near relatives in the United States.

Henry Doehr, who for seven years was employed by the Crown Pottery at Evansville, and who was a member of Company M, 120th Infantry of the famous Wildcat Division, was wounded in action recently in France, and he is now in a base hospital in England recovering. He has been in France since May of this year.

News has been received at Equality Ill., that John Winters, formerly connected with a large brick manufacturing concern at Albion, Ill., had been wounded in action in France, but that his wound was not serious and that he is now recovering. He is with the United States Infantry.

Within a short time parts of the Dixie Bee Line Highway that runs from Danville, Ill., to Adams, Tenn., where it connects with the big Dixie Highway will be inspected. Mayor Benjamin Bosse, of Evansville, is the president of the Dixie Bee Line Highway Association. Parts of the highway were built of brick. The brick and tile manufacturers of southern Indiana are strong advocates of good roads and it is expected that the next five years will witness much road building in that part of the state.

Michael D. Helfrich, head of a large pottery company at Evansville and one of the leading capitalists of that city, a few days ago bought a tract of 560 acres of fine timbered land near Evansville, paying $160,000 for the same. He will establish a saw mill and after he has sawed up the timber, he will open a large and modern coal mine that will give employment to a large number of men.

Sanitary brick; brick that hands do not touch. The brick that Evansville's newest industry will produce will approach the ideals that breakfast food makers hold up as the height of sanitation. In addition Evansville's new brick will be cooked, not burned. The New Process Brick Company's plant at Virginia street and the Chicago and Eastern Illinois railroad in this city will be in active operation some time during the month of November, it has just been announced. All the machinery has been installed with the exception of one motor which had been held up by the government priority ruling.

A HOOSIER.

KENTUCKY BRICK MEN CONFER.

CO-INCIDENT with that premature announcement that an armistice had been signed, which set all Louisville off in a wild hurrah of celebration, H. C. Cramer, president of the Kentucky Clay Products Association, came down from Lexington. What really brought him down was business with the engineer of the State Fuel Administration, Mr. Cramer being chairman of the Industrial Furnace section for the state, but as a result of his coming there was an informal conference of brick men on the subject of holding a meeting of Kentucky clayworkers during the winter.

J. T. Howington, treasurer of the Association, got busy with the telephone and rounded up some of the local trade for a lunch and conference at the Old Inn. Those present were: H. C. Cramer, J. T. Howington, Isaac Taylor, T. Bishop and J. Crow Taylor.

Mr. Bishop expressed the opinion that the time was ripe for a general getting together of the clayworkers of Kentucky and of those outside the state who market their product here. This opinion was heartily endorsed by the others present and tentative plans have been outlined for a meeting to be held some time in January.

Speaking of business, Mr. Cramer said he had been struggling along all summer and fall with part of a crew and expected to wind up the year with an output of about three million. He has one yard that can be operated through the winter, but right now is uncertain as to just how long he will try to keep it going, and may soon close it down till toward spring. He has found a fairly ready market for the year's output.

T. Bishop, of the Southern Brick & Tile Co., has a producer gas kiln that he thinks is helping out considerably as it very materially reduces the coal consumption, which, as any one knows, means lowering the cost in a worth-while manner these days.

J. T. Howington, of the Coral Ridge Clay Products Co., says that they have not been going so very strong on brick this year, but have been busy as bees on hollow tile.

Incidentally the gathering was persistently congratulating and teasing Isaac Taylor on having at last forsaken the ways of single cussedness and committed matrimony. This makes the Louisville Brick Club a 100 per cent. married club. And Isaac blushingly thanked the club for properly remembering him when the event occurred.

RAILROAD ADMINISTRATION.

The average business man and shipper generally sees two broad phases of the railway business. One is service, and the other is cost. And though plainly the consolidation or coordination of all railway interests should make for improvement in both the actual reverse conditions have prevailed. As one authority puts it, the relatively slight economies which have so far been effected by unified operation have been negligible in the face of increased costs. In the matter of service the returns so far are no better, for there is a maze of embargoes which is depressing as well as confusing. True, we understand that these are extraordinary times, and that war matters must go forward without hindrance even though business suffers. Also we can appreciate that it takes time to get the new order of things working smoothly. Even considering duly all that, however, the average shipper is inclined to feel that so far the railroad administration has not brought the marked improvement hoped for.

REFRACTORIES

SILICA BRICK IN OPEN HEARTH FURNACE ROOFS.

(From Abstracts Made by E. C. Buck, "Iron Trade Review.")

E RENGADE recently presented an interesting paper before the Paris Academie des Sciences on the structure and quality of brick after use in roofs of open-hearth furnaces. The brick had undergone considerable alteration in use. As is well known, among these changes was the conversion of the quartz into cristobalite and this into tridymite. The results of these conversions are chiefly physical, considerable expansion taking place.

Mr. Rengade also shows that there are chemical changes worthy of attention resulting from the influence of the dust particles floating in the atmosphere of an open-hearth furnace. Four different zones can be distinguished in these bricks.

(A) The lower layer immediately in contact with the flame is glazed and frequently shows protuberances depending downwardly (stalactites) and of variable lengths. The coloration of a freshly broken surface is a light gray and the mass has a perfectly homogeneous aspect and frequently is dotted with blowholes.

(B) Above this zone and generally very sharply separated therefrom, follows a black or dark-gray zone, likewise having a very homogeneous aspect and a very considerable crushing strength.

(C) A transition zone which, most frequently, is indicated by the appearance of white specks in the middle portion of the black zone (No. 2) which are the original thicker quartz grains not completely absorbed. The black zone then merges into a pale brown zone in which the heterogeneous structure of the original brick again becomes visible and which appears as if only impregnated with a fused substance having a brown coloration.

(D) The uppermost layer of the brick did not undergo any detectable alteration.

The microscopic examination, in polarized light, thin sections cut from the 4 aforesaid zones reveals Zone B the frequently described structure composed of large transparent tridymite crystals; the joints between these crystals are filled with a black, opaque substance. In Zone A it is noticed that tridymite has undergone actual fusion, the large crystals being replaced here by spherules surrounded by, but not mixed with, the black opaque constituent. On cooling, the molden tridymite changes into cristobalite and, in some places, forms

Brick from Acid Open-Hearth Furnaces, Composition of Zones in Per Cent.

	No. 1		No. 3		No. 2				No. 5			
	A	B	A	B	A	B	C	D	A	B	C	D
SiO_2	90.30	87.00	94.30	94.80	79.60	74.76	91.00	95.30	93.60	94.60	93.80	97.50
Al_2O_3	.....	0.60	0.90	0.50	0.80	1.10	2.70	1.10	0.50	0.40	1.70	0.60
CaO	1.20	2.50	1.30	1.15	0.10	0.30	3.35	1.90	0.25	0.80	3.15	1.40
MgO	Trace	Trace	Trace	Trace	Trace	Trace	0.05	Trace	Trace	Trace	0.04	Trace
FeO	0.87	0.51	0.08	0.44	5.73	4.47	.....	.....	1.12	0.36	.....	.....
Fe_2O_3	6.21	8.44	2.97	2.96	13.62	19.03	2.51	1.27	4.50	3.81	1.37	0.43
Mn_3O_4	0.73	1.32	0.24	0.25	0.29	0.28	0.19	0.20	0.18	0.14	0.20	0.20
	100.21	100.37	99.79	100.10	100.14	99.94	99.80	99.67	100.15	100.11	100.26	100.13
Total Fe	5.02	6.30	2.14	2.42	14.00	16.80	1.75	0.88	4.02	2.95	0.96	0.30
Fe in another brick from the the same furnace	.....	.....	10.61	5.20	4.35	4.35	.....	.....	6.43	7.18	.....	.....

Brick from Basic Open-Hearth Furnaces, Composition of Zones in Per Cent.

	No. 6		No. 9				No. 10			
	A	B	A	B	C	D	A	B	C	D
SiO_2	89.00	84.30	89.00	88.80	91.00	97.30		88.20	83.80	95.70
Al_2O_3	0.70	0.90	0.80	0.70	1.80	0.70		0.60	1.30	0.50
CaO	2.00	3.40	3.90	3.85	4.20	1.15		1.90	6.30	2.00
MgO	0.20	0.20	0.65	0.72	0.10	Trace		0.20	0.10	0.12
FeO	1.44	2.57	0.75	0.50	.....	.....		2.18	1.28	.....
Fe_2O_3	5.30	7.65	3.59	4.39	2.56	0.48		6.43	6.29	1.71
Mn_3O_4	0.77	1.04	1.11	1.00	0.52	0.14		0.65	1.02	Trace
	99.41	100.06	99.80	99.96	100.18	99.77		100.16	100.09	100.03
Total Fe	4.84	7.35	3.09	3.47	2.02	0.38		6.20	5.40	1.20
Fe in another brick from the same furnace	3.21	6.81	..... This zone missing	.....	.....	.....	.....	.....	.....	.....

birefringent regions of badly developed tridymite. In Zone C the large tridymite crystals continue to appear, but gradually diminishing in size and numbers according as the less heated sections are approached, until in Zone D the normal structure of the original brick is again encountered. On analysis of the composition of the four zones, the results in the tables were obtained.

It will be seen that Zones A and B contain greatly varying and sometimes very considerable amounts of iron. The state of oxidation is likewise subject to variations, but very near to Fe_2O_3. Zones A are frequently, but not always, higher in iron than the corresponding Zone B which fact may be explained by admitting that the black ferruginous constituent not mixed with the silicious constituent in the fused Zone A, is drawn into B by capillarity to fill the gaps between the tridymite crystals. Likewise, it seems as if the CaO in the brick travels by capillarity in the state of a fusible silicate which impregnates the entire Zone C, at the expense of Zones A and B, which thus become impoverished with regard to CaO (in acid open-hearth furnaces).

The grey and black colorations of A and B respectively, have no direct relation with the iron content but are due to the fact that the large tridymite crystals in Zone B are highly transparent, whereas the troubled structure of SiO_2 in Zone A renders it translucent. A remarkable fact is that the fusibility of the bricks is not sensibly affected by very high percentages of Fe_2O_3, according to direct experiments and the actually observed excellent behavior of those most impregnated in the furnace.

Effect of Floating Particles of Iron Oxide.

The fluxing effect of minute particles of Fe_2O_3 floating in the atmosphere of an open-hearth furnace in which the ore-process of steel manufacture is carried out, has been investigated by Prof. H. Le Chatelier, in collaboration with B. Bogitsch, and a condensed report read before the Academie de Sciences of Paris on May 13, 1918 (Comptes-Rendus, 1918, vol. 116, pp. 764 to 769). This investigation corroborates that made by Rengade (see above) and the same conclusion is arrived at: That the penetration of iron oxide into the interior of the brick is due to capillary migration. On placing upon a piece of silica brick impregnated with iron oxides a thick paste made from finely powdered silica brick, but containing no iron, and heating for an hour at 1600 deg. C., it will be noticed that the coloration of the new brick has risen to a height of about 5mm. This penetration of iron oxides is much more pronounced in a reducing atmosphere. A pellet of compressed iron oxides weighing 1 gram, when placed on top of a silica brick and heated to 1200 deg. C. provokes the formation in the brick of a depression conforming exactly in diameter and volume to the iron oxide pellet. The iron silicate formed diffuses downwardly into the body of the brick. The same experiment, but carried out in an oxidizing medium, gives no cavity up to a temperature of 1400 deg. C., the pellet resting intact upon the surface of the brick.

The diminution of the proportion of basic oxide in the portion directly heated by the furnace flames is due to the contraction of the brick, the porosity gradually becoming smaller whereby the ferruginous slag is expulsed, causing it to rise into the less heated layers. A small experimental brick cut from the dark brown zone of an old brick, which is composed of large tridymite crystals, uniformly encased in the black ferruginous flux, suffered shrinkage to the extent of 5 per cent. after heating it for one hour at 1600 deg. C. The original brick, free from iron oxides, when heated under similar conditions, expanded about 5 per cent. as a result of the conversion of quartz into a modification of silica of low density. This shrinkage increases with time, and simultaneously, the tridymite crystals continue to grow in size.

This shrinkage can be readily observed on bricks under actual furnace conditions, at least as long as they have not undergone fusion on their exposed surface, which latter shows a small layer having the shape of the original brick, but whose dimensions are smaller by 10 per cent. This layer finally becomes detached (spalling) whereby deterioration of the brick is instigated, although this form of disintegration is extremely slow. Until then only semi-fusion has occurred. In the case of complete fusion the brick body starts to flow, giving rise to the well-known stalactites which remain suspended from the furnace roof, provided heating was slowed down in time; if not, the bricks finally melt away altogether, thereby causing drop of the entire furnace roof.

Metallic iron, when placed upon the surface of a brick, causes formation of deep holes therein both in a reducing and oxidizing atmosphere since in all cases the first degree of oxidation of the iron is the protoxide which combines at once with the silica. This explains why the gas and air ports upon which small droplets of molten iron are projected during the refining process are gradually corroded. These droplets are too heavy to rise to the furnace roof. A gradual impoverishment in CaO of the superficial layer and a corresponding increase of the CaO-content of the upper layers has also been noticed by the authors. The iron silicates on ascending further into the brick body proper drive before them the silica-aluminates of CaO pre-exisiting in the brick and used as flux during the burning stage of their manufacture.

The same phenomenon has been reproduced on a laboratory scale by taking a test bar cut from a new brick and placing it vertically upon a slab of iron oxide heated to 1600 deg. C. After one hour the repartition of the CaO in various zones of the brick was as follows:

	Per Cent.
Original brick	2.07
Zone marked by infiltration of Fe_2O_3	2.45
Zone immediately in contact with the free oxide	0.88

The height of capillary ascension of Fe_2O_3 was only about 20 mm. Instead of heating only for one hour, heating is prolonged for weeks and months, the distance the iron oxide travels is correspondingly greater, and accordingly the volume of the brick "washed" by the iron oxide being also greater, the enrichment of the uppermost zones with CaO is also the more pronounced. This enrichment is the more important, the higher the rate of destruction of the brick, since the cross sectional area of each zone being smaller, the relative concentration of its CaO must be higher. This conclusion is in accordance with the experimental results given above.

This accumulation of CaO in the middle zones is of great practical interest. A mass containing about 5 per cent. of CaO, as, for instance, Zone C of the bricks investigated by the authors, has its fusion point near 1600 deg, C, whereas Zone A of the same brick has its fusion point at 1700 deg. C. If, as a result of excessive heating conditions the temperature of 1700 deg. C. is momentarily exceeded, and the superficial layer is fused away, the layer immediately following the latter, being suddenly brought into contact with the flame before the capillary functions have had time to impoverish it in basic oxides, will necessarily be brought to fusion in turn. Thus, in a few minutes, a brick may lose one-half of its weight in material. A silica brick impregnated with iron oxide is thus in a sort of unstable equilibirium; for severe furnace conditions (with regard to temperature) are sufficient to cause disaster. This is one of the reasons why the manipulation of a basic open-hearth furnace is so delicate an operation.

A timely hint to the youngsters with ambitions for selling and exploiting is to study languages, and especially those of the countries south of us.

OFFICIAL ANNOUNCEMENT.

THIRTY-THIRD ANNUAL CONVENTION OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION AND ALLIED ORGANIZATIONS TO BE HELD AT THE WILLIAM PENN HOTEL, PITTSBURGH, FEBRUARY 2 TO 8, 1919.

To Members N. B. M. A.:

Glad Tidings! The dreadful war is over, "over there," and throughout the length and breadth of our great Nation there goes up a joyful shout of thanksgiving. A heartfelt prayer of gratitude is on the lips of every mortal. Each and every one is echoing the glorious thought PEACE ON EARTH FOR EVER MORE. The world turns from the fearful strife and carnage to thoughts of peace and peaceful pursuits. We are at the dawn of a new era; the world must be rebuilt and made a suitable abode for contented and industrious people who will again devote themselves to useful labor and the pursuit of happiness, instead of feverishly striving to destroy one another.

This new era is the opportunity for the clayworkers of the Nation to get together and co-operate to mutual advantage for the proper promotion of every branch of the industry. It is a great occasion for a **Peace Convention** to consider the needs of the industry and the best methods of readjustment to meet the demands for clay products that will follow with the re-establishment of all industries, whether considered essential or non-essential. As a matter of fact, the brick industry is an essential industry. Particularly so in peace time. The production of indestructible, fire-proof sanitary homes is certainly second in importance to no other industry, and in the time to come will be given the consideration by those in authority which its vast importance deserves. Soon again the cry will be for BRICK! BRICK!! MORE BRICK!!! The demand will be insistent and to meet it will require the best efforts of our craftsmen who will be handicapped in various ways, but chiefly by the shortage of labor.

To meet this and other vexing problems which now confront clayworkers calls for hearty co-operation, and the entire craft is urged to gather at Pittsburgh, Pa., the week of February 2 to 8, 1919, and participate in the thirty-third annual convention of the National Brick Manufacturers' Association and all allied organizations, in response to the cordial invitations of the city's chief official, Mayor E. V. Babcock, Pittsburgh's great commercial organization, the Chamber of Commerce, and the Pennsylvania Clay Club, which includes practically all of the brickmakers of that locality, each and all of whom will welcome us with open handed hospitality.

Hotel Headquarters.

Pittsburgh is the logical place for a great Peace Convention at this time, for it is among the greatest industrial centers of the Nation. Its old sobriquet, "The Smoky City," has of late given way to the more modern name, "The Armory of the Nation." It is a great brick city and one of its finest brick structures is the new William Penn Hotel which towering above neighboring skyscrapers is one of the most conspicuous buildings of the city. It is one of the finest and largest hotels in the world, so it has been selected as headquarters convention week. In equipment it is surpassed by no hotel anywhere, at home or abroad, and will afford admirable facilities for the comfort and convenience of the delegates, and withal at very modest rates.

Delegates and those accompanying them, will be accommodated on the European plan at the rate of $2.50 per person for two or more in a room. Those desiring single rooms or special accommodations will be booked at the regular rate governing same, which ranges from $2.50 per day up. Every guest room in the William Penn has a bath. Its dining rooms, banquet halls and convention accommodations are sumptuous, and it is so spacious that our entire membership can be accommodated.

All Allied Organizations Invited to Participate.

As usual, all the allied organizations are invited to meet at the same time, and ample accommodations will be afforded them for the orderly transaction of all business offairs. The National Paving Brick Manufacturers' Association will hold its sessions at the William Penn, as also will the National Clay Machinery Manufacturers' Association and the National Building Brick Bureau. Other organizations desiring accommodations are requested to communicate with the Secretary.

The American Ceramic Society will meet at the Fort Pitt Hotel, which is under the same management as the William Penn.

As Pittsburgh is the heart of the clay industries and is within one night's ride of 45,000,000 people, a large attendance is assured. In due time an appropriate program will be arranged, providing for the consideration of all the important questions which now perplex clayworkers, and it is anticipated much good will result to those engaged in any and every line of clay work. As heretofore, the convention will combine business with pleasure, but the festivities will be of a character to facilitate the business features.

Those desiring further information as to the requisite of membership in the N. B. M. A., or any other detail of the convention arrangements are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,
GEORGE CLIPPERT, President.
THEO. A. RANDALL, Secretary.

PITTSBURGH'S MUNICIPAL CHIEF TENDERS THE FREEDOM OF THE CITY.

City of Pittsburgh, Pennsylvania.
Office of Mayor.
November 12th, 1918.

Mr. Theodore A. Randall, Secretary,
National Brick Manufacturers' Association.

Dear Sir:

It is my understanding that the National Brick Manufacturers' Association has under consideration the City of Pittsburgh as its choice for a place to hold its 33rd Annual Convention next February.

This being true, I want to extend to the Association, through you a cordial invitation to come here for the occasion referred to. We are always glad to welcome strangers, but when men engaged in a business such as yours meet to consider problems affecting the trade, I feel that we have in the City of Pittsburgh many attractions and advantages which should appeal. No doubt this phase of the subject has been cared for through the invitation extended by the Chamber of Commerce.

Be assured, Mr. Randall, that the latch-string is out; know

now that you will receive the glad hand of welcome from the Municipality and our people at large.

Very respectfully yours,
E. V. BABCOCK, Mayor.

THE LATCH STRING HANGS OUT AT PITTSBURGH.

Chamber of Commerce
of Pittsburgh.
November 11, 1918.

Mr. Theodore A. Randall, Secretary,
National Brick Mfrs.' Ass'n and Allied Organizations.

Dear Sir:

The Chamber of Commerce of Pittsburgh extends a cordial invitation to the National Brick Manufacturers' Association and to organizations affiliated with it to hold their next joint convention in this city.

It is needless for us to extol the advantages of Pittsburgh as a Convention City in addressing members of your organization, all of whom, no doubt, are familiar with the facilities offered here for a meeting place for representatives of large industries.

Pittsburgh is situated in the geographical center of the brick manufacturing district of the United States and in our own city yours is one of the most substantial industries. With modern hotels, the best of transportation facilities and attractive amusements, Pittsburgh offers every advantage for your meetings.

We want your members to know that the latch string is out and that they will be welcome in the new home of the Chamber of Commerce.

Yours very truly,
GEORGE S. OLIVER, President.
A. C. TERRY, Secretary.

THE PENNSYLVANIA CLAY CLUB BIDS THE N. B. M. A. A HEARTY WELCOME.

November 11, 1918.

Mr. Theodore A. Randall, Secretary,
National Brick Manufacturer's Association,

Dear Mr. Randall:

I am advised that you are contemplating holding your next atnnual convention in this city, and naturally am much pleased for I am quite sure you will find Pittsburgh a most desirable meeting place, affording every facility for the transaction of the business of the association. Therefore both personally and on behalf of the Pennsylvania Clay Club I extend to you and through you to all the members of the National Association a sincere welcome. Since the Pittsburgh district is the real center of the brick industries of our country, I hope you will honor us by accepting our invitation, and can assure you that the brickmakers of this section will gladly render every assistance in their power to make the convention in every way a gratifying success.

Very sincerely yours,
THOS. E. WILSON.
President The Pennsylvania Clay Club.

THE NEW CATALOGUE.

If you are getting out a new catalogue this winter it will be well to keev in mind the fact that there has been pretty wide adoption of a standard size for catalogue pages of 7½x10⅝. For smaller catalogues half that size, 5¼x7½ inches is acceptable, if saddle stitched so that it can be opened out flat for filing.

N. B. M. A. COMMITTEES HAVING TO DO WITH PROGRAM AND OTHER ASSOCIATION WORK.

President George H. Clippert has appointed the following committees pursuant to resolutions adopted at the last convention, having to do with the various phases of development work and the progress of the industry. The president and secretary of the Association are ex-officio members of all committees.

Committee on Fire Prevention.

H. H. Stafford, Augusta, Ga.
Jotham Post, East Williston, L. I., N. Y.
M. C. Viele, North Adams, Mass.
J. L. Buckley, Des Moines, Iowa.
Howard Frost, Los Angeles, Cal.

Committee on Efficient Engineering.

E. C. Hillyer, Raleigh, N. C.
John B. Cahoon, Salt Lake City, Utah.
J. F. Reynolds, North Haven, Conn.
J. T. Howington, Louisville, Ky.
W. W. Dickinson, Little Rock, Ark.

Committee on Publicity.

W. E. Dunwody, Macon, Ga.
Herman Matz, Chicago, Ill.
B. W. Ballou, Buffville, Kansas.
John Andre, Evansville, Ind.
Charles H. Bryan, Detroit, Mich.

Research Committee.

B. Mifflin Hood, Atlanta. Ga.
Warren Ittner, Belleville, Ill.
William Koch, St. Paul, Minn.
Spencer M. Duty, Cleveland, Ohio.
O. W. Ketcham, Philadelphia, Pa.

Program Committee.

M. E. Gregory, Corning, N. Y.
R. C. Burton, Zanesville, Ohio.
D. Warren de Rosay, Corry, Pa.

Committee on Technical Investigation.

Prof. Edward Orton, Washington, D. C.
W. D. Richardson, Columbus, Ohio.
Prof. A. V. Bleininger, Pittsburgh, Pa.
Marion W. Blair, Thornton, W. Va.
R. Kanengeiser, Bessemer, Pa.

TIMELY SUGGESTIONS.

When a customer wants something in the way of clay products that you are not prepared to furnish, do you just let it go at that, or do you try to render a service to him and the industry by helping him to locate it elsewhere?

We have all learned something of thrift and resourcefulness during the war ,and now let us make some good use of what we have learned instead of simply storing it away to be neglected and forgotten.

The question of the coming day at the producing end of the clayworking business is not to see how much the prices may be cut, but find out how much the cost of production may be reduced through efficient methods and the use of labor saving devices.

It is very likely that one reason why the Red Cross built some monuments to American enterprise in England out of brick was that it didn't cost any more to do it right than to build with lumber. And that is a thought worthy of preserving for future use.

PREVENTION OF LONGITUDINAL CRACKS IN HARD SURFACE PAVEMENTS.

By Wm. C. Perkins, C. E.*

CAN LONGITUDINAL CRACKS in hard-surface pavements be prevented? Many brick and concrete pavements, especially in northern latitudes, develop unsightly cracks along the center line of the pavement, which mar otherwise good pavements. These cracks may not lessen the durability of the pavement and they are easily taken care of at small expense, but they are defects which we should endeavor to overcome by improved constructional methods.

The study of longitudinal cracks in hard-surface pavements has evolved several theories of causes. The generally accepted theory is that of pressure exerted against the underside of the artificial foundation by the freezing of water in the underlying sub-grade. Undoubtedly other conditions, such as traffic or soft sub-grade, might be either an efficient or a contributory cause of cracking; but in my opinion 90 percent of longitudinal cracks are the result of frost heavage.

How can this frost action be prevented? We have said in the past, "Drain! drain! and more drain! Keep the sub-grade dry!" and in our endeavors to keep sub-grades thoroughly dry we have cross-drained, drained longitudinally, herring-bone drained and drained the taxpayers' pockets, yet we have longitudinal cracks, many times directly over our elaborate system of drainage.

Underdrainage is unquestionably advantageous in lowering the water table, but present methods fail to keep sub-grades dry, particularly in clay soils and in soils susceptible to capilarity. While our present drainage system does not prevent cracks due to frost action, it does tend to prolong the life of pavements; nevertheless, in spite of drains a certain amount of water reaches the sub-grade underlaying and supporting the artificial foundation, and successive freezing and thawing, especially in the early spring of the year, causes upheaval of the sub-grade. As explained in a recent article printed in certain engineering journals, as the pressure cannot go downward on account of the frozen ground, it must extend upward. This upward thrust breaks the pavement.

We do not know exactly how the pressure acts. We have not enough data on the subject to warrant positive conclusions. Undoubtedly, after the war, when engineers will have more time for research work, tests will be made to determine exactly how the upward pressure acts and how the resultant forces are distributed through the pavement. All we really know now is the result—a pavement cracked, usually along or near the center.

Evidently the remedy must be found in a foundation design. Can we construct a foundation which will, either entirely or in some measure, overcome the destructive action of frost?

As a means of accomplishing this purpose I suggest for consideration a foundation constructed as follows:

Upon the earth, or prepared sub-grade, lay a course of two-duct tile, 4 inches in height, outside measurement. The surface measurements could be any standard size, but I would suggest 8½ inches wide by 12 inches long. They may be made of any desired material, such as concrete, vitrified shale or clay, and of any shape or form.

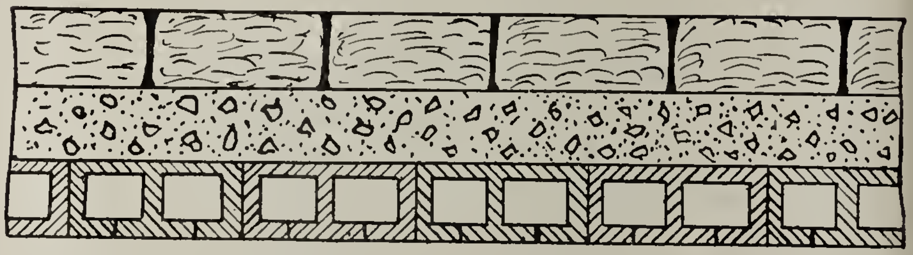
Complete this foundation with 2 inches or 4 inches of concrete or other suitable material. We have then prepared a 6 to 8-inch foundation upon which to place our wearing surface of any standard paving material—brick, block, concrete or bituminous.

By the use of the tile in the artificial foundation we endeavor to minimize the force of the upward pressure of a frozen sub-grade.

(1) The tile acts as a non-conductor of heat between the ground and the paving; the air within the ducts of the tile serving as a non-conductor, prevents the frost from penetrating through the pavement to the sub-grade, or, in technical language, prevents the escape of heat from the earth. In many sections this type of construction may prevent actual freezing of the sub-grade, while in extreme northern sections it will materially reduce the freezing.

(2) When the earth, or sub-grade, does freeze, notwithstanding the heat insulation of the tile, we believe that the upward pressure of the frozen sub-grade would be dissipated by the eventual breaking of the tile, and that the force, or explosion, would be compensated by the air space and not be transmitted to the paving above. In case the tile should be too strong to break under pressure of a frozen sub-grade, the bottom of the tile, under the air spaces, would be "scored," thus providing a weak spot to break under this upward pressure. The superfoundation and the wearing surface would be sufficiently strong to bridge over any breakage of the bottom of the individual tile under the air-space sections, since the walls and partitions of the tile would remain intact and would afford ample support to the superfoundation.

(3) The tile would also act as drains to carry off any ground water or water drawn into them by capillary action, thus lessening the hazard of cracking due to the upward force exerted by frost in the sub-grade.



Cross Section of Uncrackable Brick Pavement

The tile may be laid longitudinally, transversely or diagonally.

If laid either transversely or diagonally, the water would be carried to the curb or edge, where it can be taken care of by means of longitudinal drains or French drains of gravel or stone.

If the tile are laid longitudinally the water can be taken care of at regular intervals by cross-drains of tile or by French drains of gravel or stone.

The grade and cross-section of the improvement would determine these details.

It is difficult to estimate comparative prices in these abnormal times, but basing estimates on available data, the 4-inch tile should not cost more than 4 inches of concrete in place, and if constructed as suggested the tile and concrete foundation should be able to carry at least the same load as if the foundation were entirely of concrete or of a material of equal load-bearing strength.

The type of foundation I have suggested as a means of preventing longitudinal cracking of hard-surface pavements is the result of study and experience, and while it has not been subjected to the final test of practical service under all kinds of climatic and traffic conditions, I have sufficient faith in its utility for the purpose designed to have the type of construction protected by patent.

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*Chief Engineer, Dunn Wire-Cut-Lug Brick Co., Conneaut, Ohio.

DOING WHAT WE CAN—ALL WE CAN—WHEN WE CAN.

DID road building interfere with the war? If we had thought so, not one word encouraging highway improvement would have been uttered by us. We did and do believe that war hinders road building and so it does many things which nevertheless we must engage in to the very utmost for the very reason that though hindered and lessened they still are necessary and without them we could not have won the war. We must have food even though not in abundance. We must have facilities for transportation even though not of the highest efficiency or all else must fail. We know we can not have any requirement completely but each forming part of the whole must be supplied as completely as possible.

Where is the line to be drawn? Certainly not that everybody who can, shall withhold his efforts to raise food and add to transportation; rather the line shall be drawn at the extreme of all effort possible to produce food and facilitate its delivery. No one more needed for making other supplies needed for war should have withheld his services, all power necessary at the front should have been cheerfully given, but the great mass of people left at home were obligated to do all other things that were a necessary part of the nation's strength.

Here is a typical case—hundreds like it, and there could be thousands.

In a northern Ohio agricultural district a monolithic brick road is being constructed; twenty farmers compose the gang doing the work—doing it most perfectly, most skillfully—one of them just seventeen and all others over forty-six years of age; one-half of them pleased at the opportunity to earn the wages they receive, being small land owners, and the rest of them indifferent as to the job, being large land owners; but all of them working to satisfy their greater wish—to have the road completed. All of them had gotten in their wheat and rye and had their corn cut up, with nothing now to do but "tinkering around the place."

Shall we say no to such a situation? Won't all agree that it is just the thing to do? Why not more of it?

This community is doing the most they can of that which is important to be done, without interfering in the least with other requirements. It is not too much to say that road improvement under just such conditions could be multiplied times without number. An appeal for roads as a like appeal for food would not interfere in the least with the production of other essentials and tons of food now going to waste would reach an anxious and waiting market.—An Old Time Contributor.

CONFERENCE OF NATIONAL HIGHWAY ASSOCIATION.

Final arrangements are now being completed for the National Highway convention to be held in Chicago the second week in December, under the auspices of the American Association of State Highway Officials and the Highway Industries Association. A notable attendance of highway authorities is assured.

Highway officials from practically every state in the union, as well as representatives of the various national highway organizations have expressed the intention of being present. Numbers of government officials have also accepted the invitation to attend. The honorable Frank Lowden, Governor of Illinois, will open the convention with an address of welcome. Nationally known authorities upon highway affairs will speak, including Logan Waller Page, Chairman the United States Highways Council; Hon. James I. Blakeslee, Fourth Assistant Postmaster General; Hon. James M. Cox, Governor of Ohio; Roy D. Chapin, Chairman Highways Transport Committee, the Council of National Defense, and Vice President of the Lincoln Highway Association; A. G. Batchelder, Executive Secretary, the American Automobile Association, and Lieutenant Colonel W. D. Uhler, United States Army.

Each phase of existing conditions pertaining to American highways will be thoroughly discussed, and plans will be formulated for an energetic concentration of all possible forces looking to a systematized plan of actual construction upon a national basis.

Invitations have been extended to the officers of such widely-known organizations as the Lincoln Highway Association, the Dixie Highway Association, the Jefferson Association, the Yellowstone Highway Association and others to be present.

DUNN FAMILY STILL GROWING.

The Watsontown Brick Company, Watsontown, Pa., of which J. C. Fowler is secretary and general manager, is the latest firm to become members of the family of licensees of the Dunn Wire-Cut Lug Brick Company of Conneaut, Ohio. The plant will at once begin the manufacture of wire-cut lug paving brick.

CALIFORNIA BRICK MAN HOME FROM RELIEF WORK IN SWITZERLAND.

Atholl McBean, secretary of Gladding, McBean & Co., of San Francisco and Lincoln, Cal., the largest manufacturers of brick and terra cotta in California, has returned to his headquarters in San Francisco after a six months' stay in Switzerland, where he has been working in the interest of the Prisoners' Relief work of the American Red Cross. During his absence Mr. McBean has devoted his attention exclusively to the task of providing, as nearly as may be, a proper diet for American prisoners of war in Germany. He says that when he left Europe there were approximately 5,000 Americans scattered through the various prison camps of Germany. Mr. McBean and the others engaged in the work have been able to get through food for most of these, though, by means of a careful checking system, it was established that about thirteen per cent. o fthe food sent in had been appropriated by German officials. Whether or not the food went through to its proper destination was found, Mr. McBean says, to depend very largely on the management of the particular camps where the prisoners were confined. It is Mr. McBean's intention to return to Switzerland, though the war is over. During his short stay Mr. McBean is making no endeavor to get in touch with business, though he cannot help observing that, owing to the war restrictions, there is very little business to get in touch with.

POPULATION OF THE WORLD.

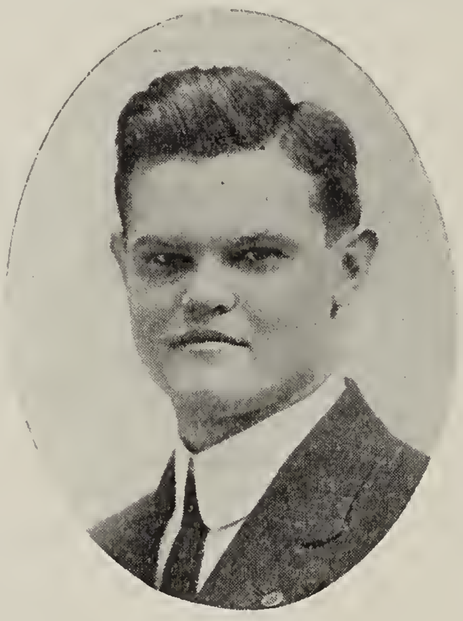
No one knows the exact population of the world, but for the present occasion we may assume that it is somewhere around two billion. Of this total something more than a billion and a half have taken part in the great war. A compilation of the figures of population of the countries at war now in hand gives a total of 1,569,410,000. The greatest population in the group is shown by Great Britain, including her colonies in which the great population of India plays an important part, with a total of 440,000.000. Next comes China with a total of 420,000,000, followed by Russia with 180,000,000, and the United States in fourth place with 110,000,000. France shows 90,000,000, Germany 67,000,000, Austria-Hungary 50,000,000, Japan 54,000,000, Turkey 42,000,000, Italy 37,000,000, Holland 40,000,000, Brazil 23,000,000, Spain, 20,000,000, Portugal and Mexico each 15,000,000. This is all the countries which show above the ten million mark, but there are quite a number ranging from two to eight million. Aside from China the United States has the largest population grouped in a solid territorial body.

BIG ORDER FOR POTTS MACHINERY TO FRANCE.

An Interesting Tale of German Duplicity.

THESE are busy days for the C. & A. Potts & Co., Indianapolis, Ind. They are having more than their share of prosperity, due to the untiring efforts of the owners, and they are leaving no stone unturned to take care of all demands upon them. While the manufacture of clay-working machinery is their main forte, a great deal of foundry work for public utilities and concerns holding government contracts plays no small part in the present activities of the firm. The ending of the war will in no way reduce this company's business volume, for they have but recently entered into an agreement with a French concern that will require a large number of brick machines and other equipment when foreign shipping facilities are granted.

This French concern, now agents for C. & A. Potts & Co. in France and Belgium, has placed an order for early shipment of twelve complete outfits of brickmaking equipment. Half of these they have been urgently requested to ship at once. After the peace settlement has been made, this foreign agent states that it will need a great amount of machinery and has agreed to take same in allotments of a dozen complete outfits at a time.



Geo. J. Potts, Indianapolis.

The C. & A. Potts machinery is exceptionally adaptable to the manufacture of clay products in France and Belgium; in fact, before the war more Potts machinery was used in these two countries than any other type; however, it was under a different cognomen.

In this particular, the German trait of plundering is again in evidence. The French concern in some way got a copy of the C. & A. Potts catalogue and noted the similarity between their machines and those used in France and Belgium, but under a German name. Upon receipt of their inquiry and further investigation, the Potts Company discovered that the German concern was manufacturing their line. This brought back to their minds and solved a mystery of twelve years' standing. The C. & A. Potts & Co. shipped a complete outfit to Germany twelve years ago, for which they never received payment. It was claimed same was lost in transit, and though every means possible was employed, neither "hide nor hair" was found as to where or how same disappeared. The fact that Potts machines were made under a German name leads them to firmly believe the outfit was confiscated and used as a model for the German manufacturer who duplicated the equipment. This is another case of German enterprise that does not set well with American ideals.

The war has destroyed nearly all clayworking equipment in northern France and Belgium. Many a time we have heard of battles around clay plants. All of these plants must be rebuilt, and seemingly Potts machinery is going to be used in the main.

The French concern has already issued a catalogue of Potts machinery, printed in French, showing the Potts complete line with illustrations of their machines and sand drier. In making their contract with the Potts Company, the French concern specifically stated that the Indianapolis concern should be free from any German capital or influence. This shows the French state of mind. Made in Germany will not have much appreciation in those war-swept countries for many years to come. The Potts Company took delight in explaining to the French concern their strictly ally tendency and their conception as to the German idea of moral obligation, especially in respect to the theft of their shipment and the use of same in making sales in Europe.

So all in all, these are mighty bright days for the C. & A. Potts Company, and rightly should it be so, for they have been manufacturers of a durable line of equipment for a score or more of years.

In passing we might add that this is not the only foreign business of the C. & A. Potts & Co. Just recently they shipped their fifth order for disintegrators to Armour & Co., Brazil, South America, and a large Potts special machine and mold sander for making fire brick to Calcutta, India.

THE ANNUAL MEETING OF THE NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION.

THE ANNUAL MEETING of the National Paving Brick Manufacturers Association will take place at the Congress Hotel, Chicago, Illinois, December 9, 1918, at 10 o'clock a. m.

Victory has come, peace is being restored and this condition places before the paving brick industry extraordinary opportunities which have been increased many fold by the neglect of our highways during the war period. This opportunity can and ought to be made the most of. Every paving brick manufacturer is therefore urged to be present at this meeting.

The Advisory Board of the National Association will meet on Saturday, December 7 at the Congress Hotel for conference, preliminary to the meeting on Monday.

The importance of this meeting is emphasized by the fact that on December 4, 5 and 6, the Chamber of Commerce of the United States and its War Service Committees will meet at Atlantic City, to take under consideration reconstructive measures which must of necessity include highway improvement. On account of this meeting of the United States Chamber of Commerce on the dates named, the meetings of the American State Highway Officials Association and the Highway Industries Association which are to be held in Chicago, will take place during the week of December 9. Upon Wednesday and Thursday, December 11 and 12, the joint meetings of these two associations will be held. Policy and plan of highway improvement throughout the United States is expected to take form at these meetings.

COULD HE DO IT?

At an Eastern military academy the night guard heard a noise. "Halt! Who goes there?" he called, in accordance with army regulations. It was another student bent on midnight frolic, and he answered "Moses." This frivolous and utter disregard of military rule, brought back the command, the guard probably suspecting the other's identity, "Advance, Moses, and give the Ten Commandments."—Argonaut.

A SUGGESTED MEANS OF SAVING FUEL.

The following article which appeared in a recent issue of Brick and Pottery Journal, of London, England, is published that the clayworkers of this country may see they are not alone in their fuel troubles. Their English cousins across the water have been having vexatious times, and with them it is likely to be prolonged, due to the fact that coal is not to be had in such great abundance on the right little, tight little island as it is over here.

ONE of the Government's Departments concerned with the question of fuel economy is endeavoring to persuade clay-working firms in the Potteries district to use coke instead of coal in firing kilns. Such a suggestion is very characteristic of a Departmental official who is put into a position as advisor with little or no knowledge of the subject on which he is expected to give sound advice. We understand that a Committee has been formed to consider the best means of using coke for kiln-firing, and here again the typical Governmental method is shown, because a committee of men, with no knowledge of coke as a fuel, can obviously be of little practical value except in so far as they are able to carry out experiments on a sufficiently large scale. It is surely obvious that a committee of pottery manufacturers could only decide whether the quality of the ware produced was or was not satisfactory; it is scarcely likely that they would be able to judge the merits of the various suggestions put forward for the utilization of coke except when these were put into actual practice and the results were shown to them in the form of burned ware.

It is generally known amongst burners of clay wares that the chief essential required in the fuel burned in their kilns is a long flame of great heating power, followed by periods in which a short flame is used so as to allow a large volume of hot air to pass into the kiln and carry the heat into the interior. The flame produced by coke is wholly short in character and therefore is quite unsuitable to the purpose of kiln burning and no means of supplying it with an additional amount of air will convert it into a long-flamed fuel. If other materials such as pitch or tar be added the long flame can be produced, but such a mixture would almost certainly be prohibitive in cost and would be difficult to use, besides being accompanied by a certain amount of risk to the firemen.

For some kinds of kiln gas-firing has been found to be entirely successful and as gas can be made from peat, lignite, coke and other fuels as well as coal there is always a possibility of its successful use in the Potteries. On the other hand, the experiments which have been made in the past are by no means conclusive, though this may, in part, be due to lack of sufficient knowledge on the part of those making the trials. For instance, one enterprising firm adapted an oven to gas-firing and collected goods from a number of manufacturers to burn in it. The oven was filled and duly burned with results that could easily have been predicted; some of the goods were satisfactorily burned but the majority were useless, simply because they were made of such different mixtures that each firm's product required different conditions for burning, and all could not therefore be satisfactorily burned at the same time. It is some years since this happened but it effectively prevented a very worthy enterprise from making the headway it deserved, and taught a number of "experts in gas firing" a lesson which they will remember to the end of their lives.

There are many peculiarities in burning clay wares which are by no means obvious to the ordinary engineer, who usually imagines "that a steady heat is all that is required to burn a kiln satisfactorily. Whilst this is true to a certain extent it is by no means the whole truth, and manufacturers would do well to proceed very cautiously before accepting the proposals of Government officials who are not known to have any knowledge of clay burning on a practical scale. Ability to lecture on fuels or to design fire-grates for boilers does not necessarily imply a valuable knowledge of burning kilns and the wiser clayworkers will therefore require to know something of the practical experience of any advisors who may offer suggestions with respect to economy in fuel.

On the other hand, there is a great and urgent need to economize coal in every possible manner and in few industries is this material wasted more prodigally than in burning some kinds of goods made of clay. Any means of saving this wastage are therefore to be welcomed, and we accordingly urge our readers to do what they can to facilitate the work of the Government officials in this respect. What we are most anxious to avoid is a further waste of fuel and of ware by the needless carrying out of experiments which are suggested by men with insufficient knowledge of the subject, with or without the co-operation of manufacturers, who may never have devoted sufficient time and thought to the subject. The men actually engaged in the industry may help greatly by pointing out the objections to the proposed methods as well as by suggesting modifications whereby these objections may be overcome.

THE USE OF LIGHT BRICK.

ALFRED B. SEARLE, a noted author in the clayworking field in England, writing on the great need of fuel conservation, in the October 12 issue of the Building World, of London, says: One simple means whereby a notable saving in fuel could be effected would be to mix a considerable proportion of coal-dust or coke-dust with the clay used for making bricks and then to burn the bricks in kilns in the usual manner, taking due care to prevent overheating. Not only would higher grade fuel be saved by this means, but instead of using kilns, the bricks might, to a large extent, be burned in the open air, like the old-fashioned clamp bricks. Such bricks would be lighter on account of their greater porosity; they could be laid readily and with little or no tendency to float on the mortar, and whilst not quite so attractive in appearance they would do well for all except facing purposes.

It is no use brick manufacturers attempting to place such bricks on the market unless builders are prepared to use them and so help on the great fuel-saving campaign. Builders would not be losers by supporting the sale of such bricks, as the cost of laying them should be less than for heavier bricks; the carriage would be less, but not the cost of cartage, which is measured more by volume than by weight. "Rough-cast" adheres better, and can be applied more rapidly on account of the absorbent nature of the bricks, and so is applied more cheaply. There is nothing inherently new in the suggested method of manufacture; rather is it a reversion to the days before the present demand for kiln-burned bricks. At the present time, and for some years to come, it seems very doubtful whether the demand for bricks can be met by existing works. If, on the contrary, a large number of self-burning bricks could be produced and sold the situation would be relieved much more rapidly than would ordinarily be the case.

Builders would, therefore, do wisely to consider how far they can make use of self-burning clamp or light bricks in their coming work, so that they may not needlessly hinder national progress because of a shortsighted policy due largely to their own ignorance.

It is not claimed that bricks made of clay which has been mixed with coal-dust have as good an appearance as those made without fuel, but under present conditions—where enormous numbers of bricks will be required for reconstruction purposes—it is necessary to forego some advantages in order to obtain the output required.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

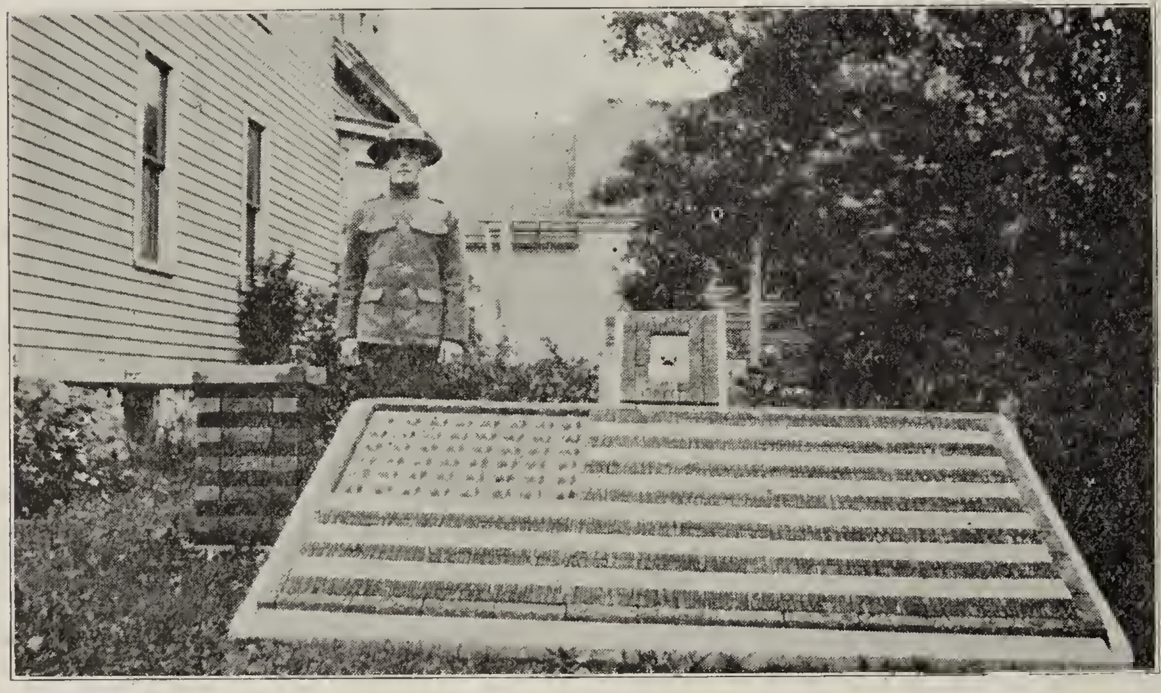
A Patriotic Display by a Patriotic Brick Man.

Editor The Clay-Worker:

We are enclosing a photograph which we believe is something out of the ordinary.

Mr. Joseph Birkmeyer, of Ebenezer, Erie county, Pennsylvania, has constructed on his front lawn a beautiful picture of the American Flag. This picture is built of Rough Texture Brick and Concrete and was erected over night so that it was first seen in the morning.

We want to call your attention to the service star that is also shown and hope that Brother Queisser will not consider this an infringement on his idea. The young fellow in khaki is Joseph A. Birkmeyer, Jr., who is in France at the present time with the American Engineers Brick Laying Division.



A Unique Display Made Over Night Showing a New Use of Rough Texture Brick. The Panel With The Service Star Was Also Laid up in Brick

Mr. Birkmeyer's residence is located about two and one-half miles outside of the corporation line of Buffalo, N. Y., and this flag is causing considerable discussion.

Very truly yours,
A. S. REID & COMPANY.

Elements of Cost Entering Into the Manufacture of Brick.

Friend Randall:

Judging by the contents of a letter received from Mr. W. E. Dunwody, Chairman Group Six, War Service Committee on Brick, it appears that our government may intend to set an arbitrary price on brick. Here are several reasons why it is impossible to set a price on brick that would be fair to every manufacturer in America:

Every bed of clay possesses individualities peculiar to itself. The manufacturer can't change his clay. He has to use methods that suit the clay.

In different sections, even in localities in the same section, conditions vary greatly in the cost of winning and transporting the clay to the machine. The same applies to converting the raw clay into brick. Some clays require more fuel than do others. The percentage of waste is also a factor in the cost of production.

These varying conditions are the causes of difference in the selling price in the different sections of our country.

The salvation of the business of the local manufacturer whose production cost is high compared to the production cost of a manufacturer at a distance whose cost is low, is the low value of a carload of brick alongside the kiln compared to the value when freight is added.

Right now many plants have only half of a crew who make brick before noon and set brick in the evening. Of course, that adds greatly to the cost of production. On top of that the overhead expense is the same as if the plant were operated to full capacity. Many experienzed clayworkers are in the service of our country, their places being filled with inexperienced men. At our plant, my son who is our plant superintendent is in the navy. I wish I were young, I, too, would be there.

J. W. McMILLAN.

Milledgeville, Ga.

Great Strides Made in Chemical Industry.

Editor The Clay-Worker:

From conversation with various interested parties at International Chemical Exposition held at New York City, the show, I was convinced that the chemical industry has made phenomenal progress in America and has become so deeply rooted that it will never again return to German soil but remain in America as a prosperous industry and be close kin to Government War preparedness.

Our spiral rings attracted a great deal of attention at the Chemical Show as they are considered a very scientific tower packing. Patents have been applied for, for the ring itself, for the die which forms the ring and for the machine on which they are produced. We are furnishing the Government with 161,000,000 pieces of chemical stoneware and now have a daily output of a half million chemical rings, operating 22 plants at 100 per cent. on Government material.

We have been so well advised as to prospective requirements that we have been prepared to make deliveries on the moment material was called for and have kept ahead of our Nation's needs for pottery chemical stoneware.

We have succeeded in accumulating a considerable stock ahead of construction requirements at each Government high explosive plant and have thus overcome any delays in construction. Most all of these plants will be used for commercial fertilizer plants after the War is over, and we understand the two plants at Muscle Shoals and Sheffield can be converted into commercial peace plants over night.

We are already looking ahead to normal peace times as we are expecting an unconditional surrender of the central powers and we are making preparations to serve the architectural trade more efficiently in the future than we have ever been able to do in the past.

Yours truly,
B. MIFFLIN HOOD,
President.
Atlanta, Ga.

Data on Burning Brick in Up Draft Scove Kilns.

Editor The Clay-Worker:

In reply to the letter of "C. R. C." in the September issue of The Clay-Worker, would like to say that we are large manufacturers of common brick on the Hudson river and have always burned our brick in up-draft scoved kilns. For years our consumption of coal for burning has averaged less than 250 pounds per thousand, and we have recently reduced this materially.

Hoping this will be of some benefit to "C. R. C." and perhaps to some other readers of The Clay-Worker, we are,

Yours very truly,
TERRY BROS. CO.
By Jay Terry.
Kingston, N. Y.

"Wants a Remedy For 'Klinker' Brick."

Editor The Clay-Worker:

Our clay has a tendency to klink in burning that we assume to be from a lack of sand. We find cost of shipping the latter to our plant to be prohibitive. Our R. R. Co. has offered to furnish FREE of CHARGE to our yards coal-cinders in any quantities. What is their value as a substitute for sand, so as to eliminate shrinkage and the promotion of greater porosity to clay products? Kindly furnish information in your next month's magazine.

Very truly,
CHEWELAH BRICK & TILE CO.

An Expert's Opinion.

Editor The Clay-Worker:

"Klink" is a new clay working term to me and I do not know what it means. Some clays burn to a glassy body and in cooling there is a clinking sound from the mass of ware and the product is badly cracked with a large per cent. of broken bricks. Such clays are, however, as a rule not high shrinking and the trouble is due to an excess of fine sand (silt) and low fusibility. A glassy body is developed which cracks in cooling.

Your correspondent is evidently using sand to overcome the trouble and states that it is essential to eliminate the shrinkage. We would conclude from this that his material is high shrinking and in burning develops a very dense vitreous body which sand opens up and in which it serves as a binder and as structural material.

If sand will accomplish the purpose ,furnace clinker will be better. It can be made coarser and sharper, and any carbon it contains will increase the porosity.

Furnace clinkers are used in a number of factories to reduce lamination difficulties, to improve drying qualities, and to counteract shrinkage, and in several of these factories the success of the operation depends upon the use of clinker.

We do not understand just what your correspondent's trouble is but it is our opinion that if sand is a good material to use to correct the trouble, furnace clinker will be a better material.

Yours truly,
CAREY P. ELLIS.

OBITUARY.

Albert Lincoln Flood, son of Harry J. Flood, of Chicago, Ill., died October 18, the victim of influenza, followed by pneumonia. Mr. Flood was twenty-nine years old and had been married eighteen months. But for his illness would have entered the service of his coutry the 14th of October. A brother, Lieut. Leslie Flood is now in France.

W. B. Kincaid, of Cincinnati, Ohio, the junior member of the firm of Webster & Kincaid, consulting engineers and kiln builders, died October 15, following a two weeks' illness of influenza, which developed into pneumonia. Mr. Kincaid was one of the younger men in the trade and his untimely death is greatly to be deplored.

Written for THE CLAY-WORKER.

WITH THE CINCINNATI BRICK MEN.

ALL ESSENTIAL BUILDING construction for the Cincinnati district, has been placed in the hands of Edwin C. Gibbs, Regional Advisor of the War Industries Board, Facilities Service, War Department. It is believed that the new ruling will help to facilitate the requirements of a manufacturer, as all orders for priority materials and labor will have to come through this office.

The month of October shows a decline in the building operations here. For the month there were 804 permits allowed, the estimated cost of which was placed at $331,775. In the same month last year there were 975 permits given out amounting to $572,695. The first three months of the year show that the amount of building done here was the lowest in a number of years. This applies to both the number of permits and the amount involved.

Mrs. Frank B. Rinder, daughter of Henry Busse, common brick manufacturer, of Covington, Ky., died at the home of her father of pneumonia some days ago. Her husband, died of the same disease two days previous to her death. He was a son of a former Covington contractor. The young couple had made their home at Louisville, Ky.

It has been decided by the trustees of the Cincinnati Zoological Park Association to delay the building of the new clubhouse and auditorium, plans for which were made some time ago, and for which bids had been received. This work was to be a job of some size, and was to cost considerable. The matter was determined on account of the desire of the government to conserve building materials. It will doubtless be undertaken after the war.

The offices of the Cincinnati Clay Co., have been moved from 1514 Union Trust Building to 1207 First National Bank Building. The removal was made on November 1. The new quarters are more desirable. Mr. Lewis Kopp, secretary of the company, who has been ill, is back at his office. He says that the demand for clay products has been slow and the embargoes have added to the delays. The present outlook is not very promising.

The Hisey-Wolf Machine Co., has been granted a permit to erect a one-story brick warehouse at Colerain and Marshall Avenues to cost $15,000.

The report at the Builders Brick Co., is that brick demands are now very quiet. Otherwise there has been a fair business. Mr. Arthur Riggs, of this company, who joined the Y. M. C. A. war forces some time ago, is now located at Camp Taylor. Louisville, Ky.

The D. C. Shorey Brick Co., note that conditions continue to be very inactive for the face brick business. Mr. Shorey says that things are dull.

CINCY.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
226 East Ohio St. T, A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXX. NOVEMBER, 1918. No. 5

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Let us give thanks.

* * *

Fighting a world-wide famine will be our big job this winter.

* * *

We can Hooverize on the eats and still have plenty to be thankful for.

* * *

Two kinds of "wolves" are howling about the world right now; the wolves of hunger, and those of anarchy.

* * *

If you have anything in the way of machinery to sell or exchange, now is the time to get busy and make the fact known.

* * *

That P. which starts off the word pottery seems to also stand for progress and push, to judge from the returns from that branch of the clayworking industry.

* * *

One of the live and interesting questions of the industrial world is how many of the women folks who have gone into industry will continue in it after the milions of men return to take their old places again.

* * *

Among the wartime words one that we will be delighted to lay away and quit using is that hyphenated thing called "non-essential."

* * *

When the youth of the country becomes as familiar with the trowel as with the hand-saw, it will be a great day in the history of the clayworking industry.

* * *

If you have an idea about how we can get brick and the boys of the country better acquainted and on more intimate terms, tell us about it so that we can pass the information around.

* * *

The coal situation has improved enough to remind us that a new and easier day in the coal trade will come by and by. Meantime all have been learning things about fuel economy that are well worth while.

* * *

When the boys come marching home from abroad they will likely bring back with them new ideas and ideals of home building as well as a desire for good roads, and brick as a building material will have an important place among those new ideas.

* * *

Restrictions and standardization have even been monkeying with our old friend the monkey wrench, and since the left hand plow has been eliminated from the farm we may presume that the "left-handed" monkey wrench has also passed from the ken of mechanics.

* * *

If the governmentt will just turn to and help business men in peaceful pursuits as wholeheartedly as the men of the country have helped the government in war activities, there will soon be some more big accomplishments to record in the history of this great country of ours.

A THANKSGIVING PRAYER.

We thank Thee, Lord; we thank Thee,
Morning, noon and night,
For the light of understanding
That leads us to the right.

In this great day when the sight of Old Glory thrills every soul with the pride and joy of victory, let us pause and give thanks to the Divinity that has shaped our course as a nation and made the Stars and Stripes an emblem of greatness, liberty and mercy throughout the length and breadth of the earth. For verily the Lord hath dealt with us as He has dealt with no other nation. To us has been given for guidance that light of understanding which has led to the greatest progress in wisdom and material attainment of any nation in the history of mankind, and to us it has brought the privilege to set forth and successfully carry out the greatest crusade of the world, and turn the tide for victory, for the liberty of mankind and a lasting peace among nations. Now may the Spirit of Peace and the Guiding Light of Understanding remain with us to light the way henceforth and forever more. Amen.

THE PERPETUAL FOE.

The distressing epidemic of influenza which has wrought havoc throughout the country is an emphatic reminder that the perpetual foe of humanity is disease, and that we should wage persistent combat against it. The experiences of the year should lead to a new and broader interest in the subject of sanitation both in industrial surroundings and in home surroundings. We have had some agitation along this line in the past, but not nearly enough. What we need is such a thorough awakening that health safeguards will become a national slogan and habit.

RAILROADS—A QUESTION.

When one contemplates the great railroads of the country in the light of future possibilities of development, and then looks around at the motor truck and its growing accomplishments as the work of good roads building progresses, there arises this question:—Will the motor trucks handle enough of the shorter haul freight tonnage in the future to more than offset the natural growth of tonnage and thus take over part of the freighting which has been done by the railroads? In that case will the railroads have to go out seeking tonnage to keep their equipment employed when the heavy war tonnage movement is over? On these questions hinge some of the possible changes that the near future may bring. Logically the more freighting by motor truck that is developed the less tonnage growth there will be for the railroads. It may be that the problem of the railroads in the future will be how to get enough business rather than how to get enough equipment to meet the transportation needs. The possible competition between motor trucks and the railroads makes an interesting theme for speculative thought.

THE OFFICE.

The office is the business home, and quite frequently the business man spends more of his waking hours in his office than in his home. Do we consider the office in this light as much as we should? Does the average business man lay out his office with the same regard to comfort and satisfaction as he does his home?

With the clayworker the office should furnish an opportunity to display his product advantageously as well as a chance to surround himself with comfort and a share of architectural beauty. Some day we will probably come to the way of thinking, to the giving of thought to beauty and comfort in the office as well as to convenience and business facility, but right now it seems to be only the exceptional man who does this with any degree of thoroughness.

It is time for us to learn to live as well as work and to mix some comfort and satisfaction in along with system and efficiency in a business sense, and to form a closer alliance between business and living. In the design and equipment of the office is a good place to make a start, and if we once get the idea started right we will find there is a wonderful field for developing the art of living in what we know as the business office.

BRICK IN THE LUMBER SHED.

It is no unusual sight to see brick in the stock of of a retail lumberman, and in the future we expect to see even more of this, but that is not the present subject. The subject is brick paving in the driveways of lumber sheds. A progressive lumberman was showing the writer through a new group of sheds being erected, and was asked what he intended to floor his driveways with. He said "brick," then he led the way over to another shed where he had a brick driveway which had been in use about eight years. To one accustomed to modern methods in brick paving it didn't look very good, the brick having been laid without good cement bonding to hold them together, with the result that the surface was a bit rough, indicating among other things that the brick would not pass the present day rattler test for hardness. Yet the lumberman said he found that paving very satisfactory, so satisfactory that he expected to use it in all his new sheds. He preferred it to cement surfacing because he found the cement hard on the horses and that they could not pull as well. Perhaps here is part of the explanation for the satisfaction with what seemed an indifferent brick paving—the horses could get a foot-hold better. Anyway, here was brick being given preference over lumber, wood block and cement for driveway paving. There ought to be more than a hint in this for the paving brick folks.

MORE THAN ENOUGH IS TOO MUCH.

Proper organization among the trades and industries is essential to harmony and progress, but there is a difference between having organizations and going organization wild. There are entirely too many organization schemes of one kind and another bidding for public favor and the time is coming when we will have to winnow out the chaff and retain only the grain—those organizations which promise specific and worth while service.

GRECIAN BUILDING MATERIALS.

Brick is the most common kind of building material in Saloniki and in all New Greece. Wooden structures are rare, on account of the shortage of timber. Stone is little used, except for underground walls and foundations. Ordinary walls are built with both plain and hollow bricks. The former, being more solid, are generally used for the building of lower stories, while hollow bricks are commonly employer in the upper stages. The principal kind of roofing used is made of lat tiling.

HOLD LIBERTY BONDS.

Practically all the victories of the Allies from the first stand on the Marne in 1914 to the surrender of Bulgaria, Turkey and Austria may be condensed into the word "Hold!" Marshall Joffre's order of Sept. 5, 1914 commanded the French troops to hold every inch of ground occupied and die in their tracks rather than yield. At Chateau Thierry last July the same principle governed the American Marines and infantry. "Hold!" That is the word for Liberty bond subscribers.

F. O. Wetmore, President of the First National Bank of Chicago sums up the case in this way:

> "The people responded most loyally and liberally in their subscriptions to the Fourth Liberty Loan. Unless the purchasers now hold and pay for their bonds their action in buying has been of little benefit. Every purchaser, therefore, to make his loyalty and liberality one hundred per cent. must save and pay for his bonds, when he or she will have in addition that grand and glorious feeling of being the owner outright of the most choice investment in the world."

A subscriber who keeps his payment pledge wins a real Marne victory over temptation to "quit." A subscriber who fails, needlessly, suffers a terrible moral defeat.

ILLINOIS BRICK COMES BACK.

One of the most interesting stock market movements in Chicago recently according to the Chicago Post, is the advance in Illinois Brick to 60, showing a recovery of 15 points from the low mark recorded Oct. 2, following the passing of the quarterly dividend. The "come-back" is attributed sot to any specific news relating to the stock, but to its advantageous position as a peace security. The stock has a book value of about $90 and there are no bonds outstanding. With the ending of the war there is every reason to expect a resumption on a large scale of building operations which have been virtually suspended for four years. The company has a good stock of building material on hand which will show no deterioration because of holding. The company was in no financial distress when the dividend was passed, but because of war board restrictions it could make no deliveries except on priority orders and it was thought best to conserve resources until times were more propitious. The stock has much merit for a long pull, but arouses no speculative interest.

A LITTLE NONSENSE.

A Proud Boast.

"It will be a proud boast in the future.

"What will?"

"Instead of a fellow saying 'I'm a self-made man,' he'll stand up and say proudly, 'the army made a man out of me'."

Opening the Flood Gates.

Mrs. Knagg (with magazine)—It says here that a South Sea Island wife isn't supposed to talk until her husband speaks first.

Knagg—I'll bet some of those husbands are fool enough to do it.

Lacked Persistence.

A city man asked an octogenarian peasant what to do to live to be 80. "Don't drink, don't smoke and keep out in the fresh air," was the reply. "But my father observed all those rules, and he died at 60." "Yes, but he did not observe 'em long enough."

Old as Creation.

Patience—Did you see that creation that Peggy wore yesterday?

Patrice—I saw her dress, if that's what you mean; but why call it a creation? It wasn't new.

Patience—I know it, but it was about as old as that.

Murphy Preferred Coasting.

An officer on board a warship was drilling his men.

"I want every man to lie on his back, put his legs in the air and move them as if he were riding a bicycle," he explained. "Now, commence."

After a short effort one of the men stopped.

"Why have you stopped, Murphy?" asked the officer.

"If ye plaze, sir," was the answer, "Oi'm coasting."

Distressing.

"It is powerful wearing on a man's nerves," admitted Mr. Gap Johnson, of Rumpus Ridge, Arkansas, "to have to be everlastingly hollering at his wife to know why in torment she don't do this, that or t'other, like splitting up the stove wood, packing water from the spring, slopping the hogs, and so forth. Sometimes I sorter wonder if marriage hain't a failure, after all, as some feller said it was."

Nothing To Do Tomorrow.

Pat, who had been given a job by a farmer, was much annoyed to see his master watching him so closely. This surveillance seemed insulting to Pat, and after a little while he could stand it no longer.

"I say," he asked, "is watching me all you have to do?"

"Yes," answered the farmer curtly.

"Well, then," said Pat, as he flung down his spade, "you'll be idle tomorrow."

Table of Contents

Brick Construction Over There 393
What the Red Cross is Doing.402
Had His Full Share of Trouble 403
The Coming Day 404
All Restrictions to be Removed Soon 405
New Construction Work Without Federal Permit...405
English Publisher Makes Pertinent Comment 405
Chemistry and Clay 405
Burning Clay Wares 406
In Flanders Fields 408
Kentucky Brick Men Confer.409
Railroad Administration 409
Refractories 410
N. B. M. A. Official Announcement 412
Pittsburgh's Municipal Chief Tenders Freedom of City..412
The Latch String Hangs Out at Pittsburgh 413
Pennsylvania Clay Club Bids N. B. M. A. Hearty Welcome 413
The New Catalogue 413
N. B. M. A. Committees....413
Prevention of Longitudinal Cracks in Hard Surface Pavements 414
Doing What We Can, All We Can, When We Can....415
Conference of National Highway Association 415
Big Order for Potts Machinery to France 415
Annual Meeting of N. P. B. M. A. 416
A Suggested Means of Saving Fuel 417
The Use of Light Brick....417
Obituary 419
Putting the Plant in Order..441
Shale Rock Oils 444
Westinghouse Went Over the Top 446
Some Pottery Milestones....448

CORRESPONDENCE:

Brick and Building News of Evansville and Southern Indiana 409
A Patriotic Display by a Patriotic Brick Man 418
Elements of Cost Entering Into the Manufacture of Brick 418
Data on Burning Brick in Up-Draft Scove Kilns 419
Wants a Remedy for Klinker Brick 419
An Expert's Opinion....419
With the Cincinnati Brick Men 419
Pacific Coast News 444

EDITORIAL:

Current Comment 436
A Thanksgiving Prayer....436
The Perpetual Foe 436
Railroads—A Question 437
The Office 437
Brick in the Lumber Shed...437
More Than Enough is Too Much 437
Grecian Building Materials..437
Hold Liberty Bonds 437
Illinois Brick Comes Back...437
Editorial Notes and Clippings 442

MISCELLANY.

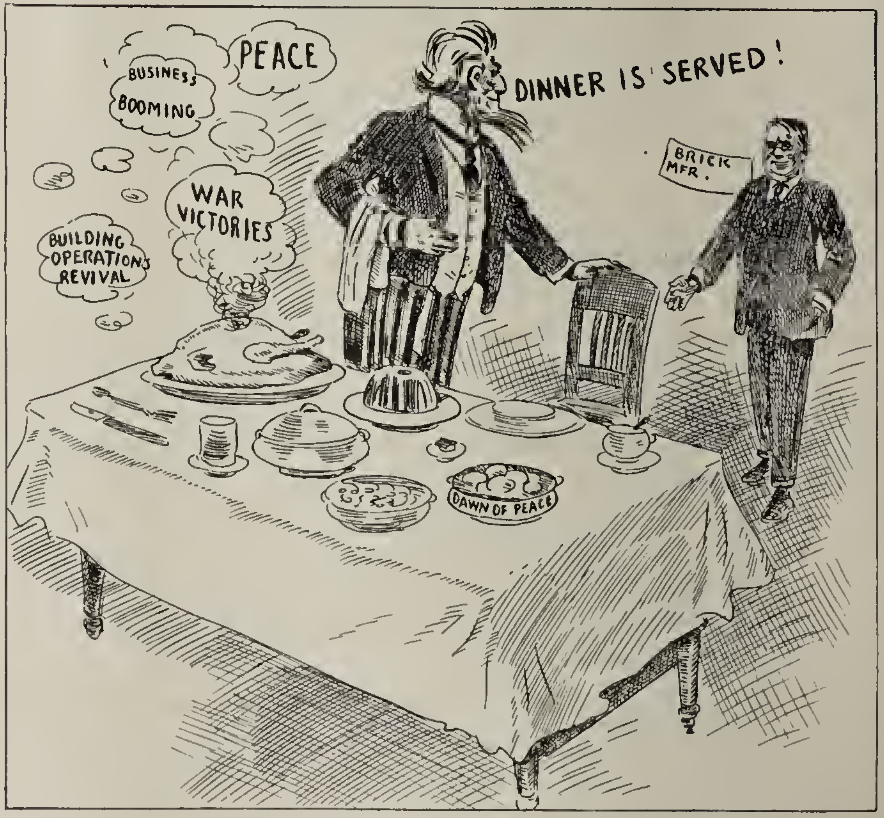
Dunn Family Still Growing..415
California Brick Man Returns from Relief Work Abroad..415
Population of the World....415
Could He Do It....416
Just American 449
Mr. Batley Takes Up New Position 449

INDEX TO ADVERTISEMENTS ON PAGE 450

WANTED.

Superintendent for two press sewer pipe factory located central Mississippi valley. Applicant must be steady, sober and reliable and have a thorough knowledge of all details of manufacture, including mixing and burning of clays; must have mechanical ability and be able to handle labor successfully. State age, experience and salary expected and give references. Address,

SEWER PIPE,
11 1 d Care Clay-Worker.



The Peace Dinner.

The Liberty Bond and Thrift Stamp are "Some" Fighters.

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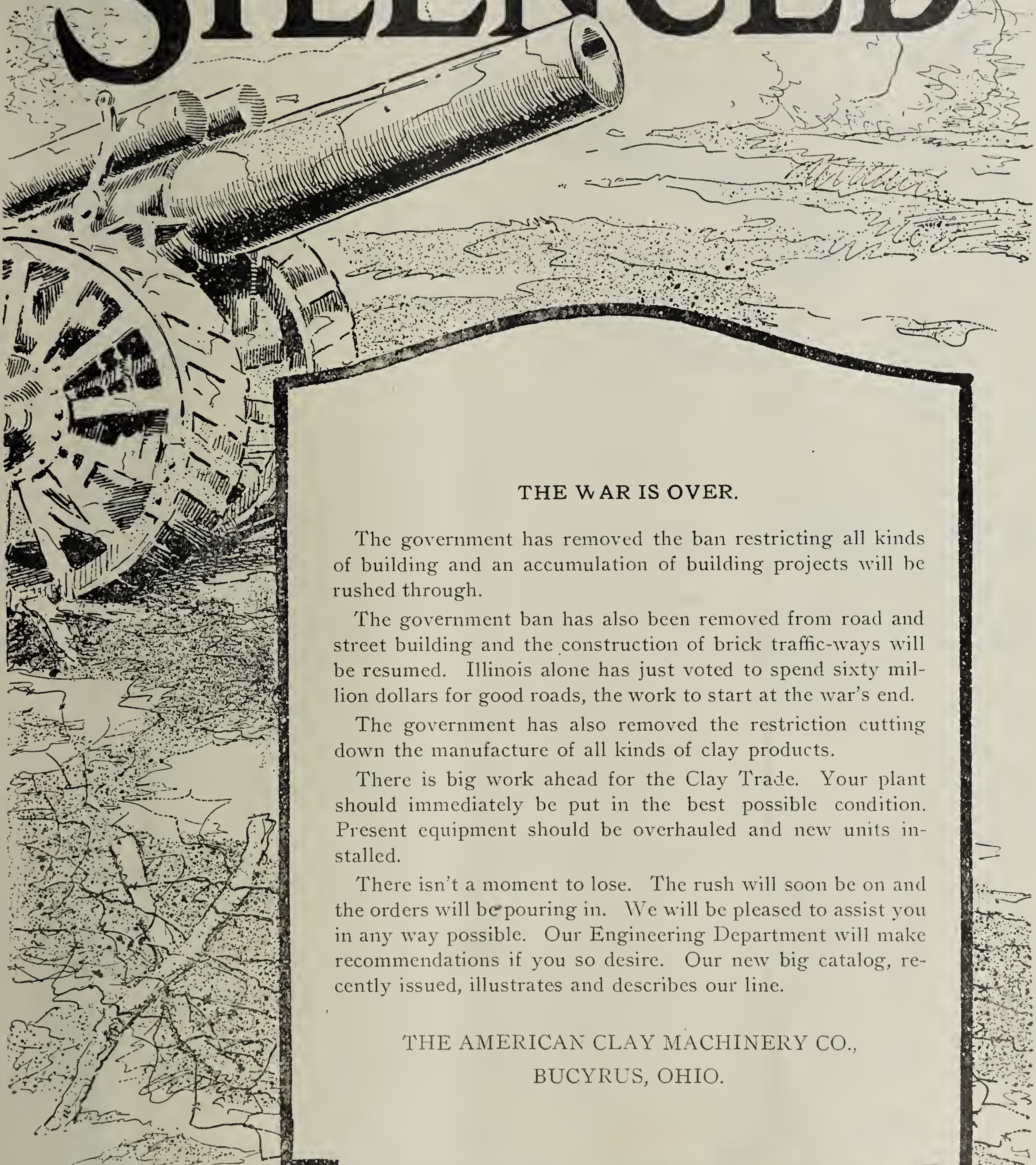

THE WAR IS OVER.

The government has removed the ban restricting all kinds of building and an accumulation of building projects will be rushed through.

The government ban has also been removed from road and street building and the construction of brick traffic-ways will be resumed. Illinois alone has just voted to spend sixty million dollars for good roads, the work to start at the war's end.

The government has also removed the restriction cutting down the manufacture of all kinds of clay products.

There is big work ahead for the Clay Trade. Your plant should immediately be put in the best possible condition. Present equipment should be overhauled and new units installed.

There isn't a moment to lose. The rush will soon be on and the orders will be pouring in. We will be pleased to assist you in any way possible. Our Engineering Department will make recommendations if you so desire. Our new big catalog, recently issued, illustrates and describes our line.

THE AMERICAN CLAY MACHINERY CO.,
BUCYRUS, OHIO.

Your Thrift Stamps helped US win. Our machinery will help "U" win.

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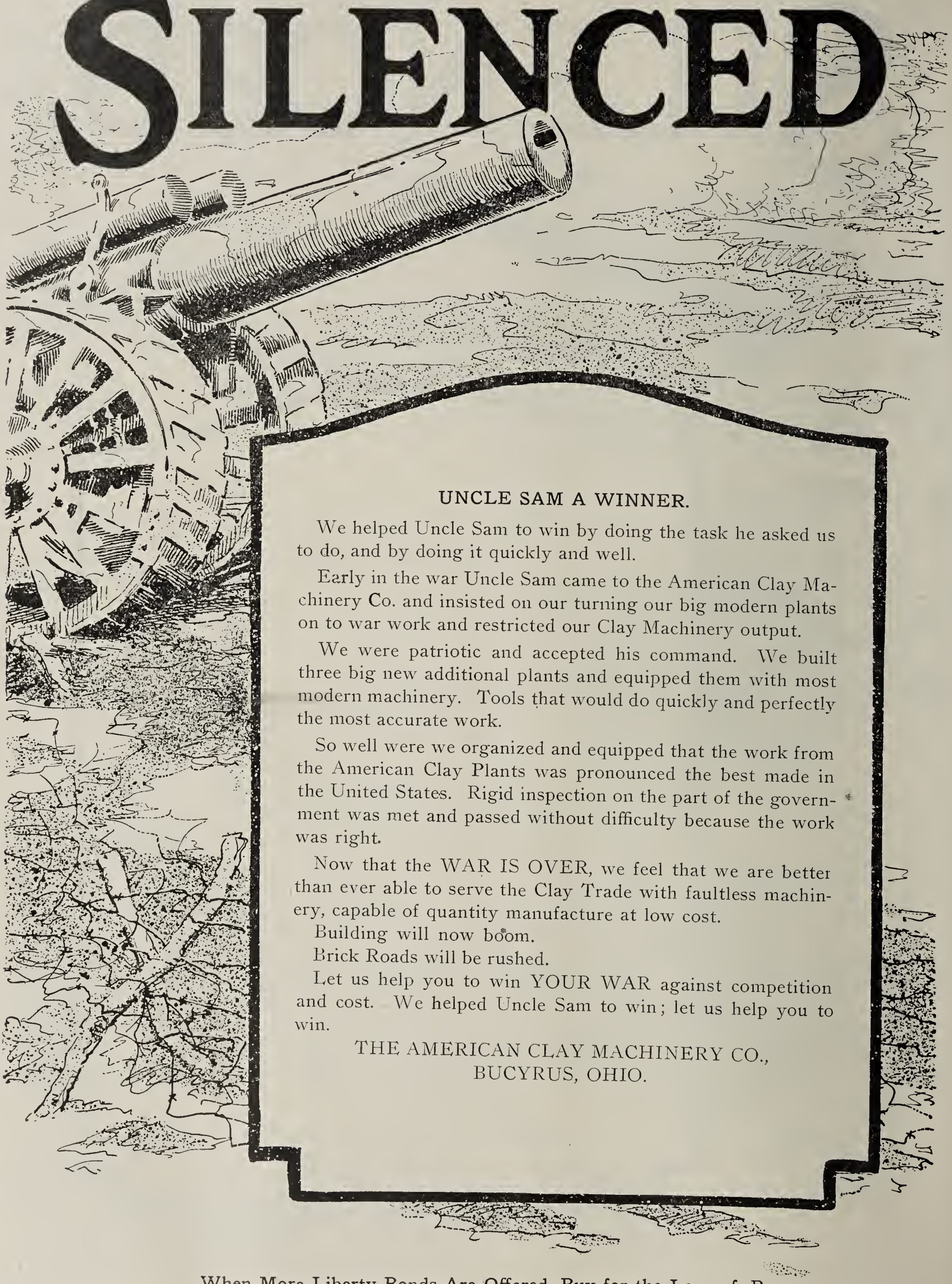


UNCLE SAM A WINNER.

We helped Uncle Sam to win by doing the task he asked us to do, and by doing it quickly and well.

Early in the war Uncle Sam came to the American Clay Machinery Co. and insisted on our turning our big modern plants on to war work and restricted our Clay Machinery output.

We were patriotic and accepted his command. We built three big new additional plants and equipped them with most modern machinery. Tools that would do quickly and perfectly the most accurate work.

So well were we organized and equipped that the work from the American Clay Plants was pronounced the best made in the United States. Rigid inspection on the part of the government was met and passed without difficulty because the work was right.

Now that the WAR IS OVER, we feel that we are better than ever able to serve the Clay Trade with faultless machinery, capable of quantity manufacture at low cost.

Building will now boom.

Brick Roads will be rushed.

Let us help you to win YOUR WAR against competition and cost. We helped Uncle Sam to win; let us help you to win.

THE AMERICAN CLAY MACHINERY CO.,
BUCYRUS, OHIO.

Written for THE CLAY-WORKER.

PUTTING THE PLANT IN ORDER.

WINTER IS QUITE COMMONLY the accepted time for taking stock of the situation about the plant and making and executing plans for improvements, enlargements and a general putting in order of the equipment for the busy spring and summer run. This winter there are a number of new factors as well as several special reasons for taking up this matter early, earnestly and more analytically than heretofore. There is the scarcity and high price of machinery and supplies, the shortage of help, and the general curtailing handicaps of the war year on the one side as offering some discouragement to the broader visions of free enlargement. On the other hand, we are facing a great shortage in clay products, with perhaps less stock on hand the country over than ever before, and the prospects of a reawakened demand for brick before another year rolls by. So there are many angles to the situation and they call for thoughtful attention and early action, that whatever plans are made may be carried out before the busy season rolls around again.

The First Thing To Do.

Obviously, the first thing to do is study the situation and decide upon some definite plan. Then sketch out what your needs will be in the way of new material and work for the carrying out of these plans. Figure in so far as possible to refit and improve the machinery you have, and to supplement it, rather than to discard freely in favor of new machinery. No matter what arguments may be advanced in ordinary times in favor of junking old or out-of-date machinery for new, they must be laid aside or modified for the time being because of the scarcity of metal and the difficulty of getting new machines. Often it may be found advisable to modify and alter original plans so as to make them fit in with what is available rather than with what you may desire.

A Hint to Machinery Men.

Right here one of the best suggestions that can be offered is that those who may require new machinery during the winter is to get in touch with the machinery manufacturers and find out what they have already on hand. If machines already in stock can be made to fit into your needs the matter is very simple, and quite different from what it may be if the new machinery wanted has to be made. And this suggestion goes double—for the machinery folks as well as for the man needing machinery. It is a time when the machinery folks should get busy and make a clean-up of the machinery stock on hand. This should be easy. Free advertising and listing of machines actually on hand should do the trick, and prove of service to the man needing machinery as well as to the machinery man in cleaning out stock. Just this hint here ought to be enough to enable the machinery folks to see interesting possibilities.

Fuel Economy.

In considering repairs, improvements and enlargements, what may be termed the first point of prime importance is that of fuel economy, both at the kilns and at the power plant. This means in its broad sense economy in primary fuel consumption and the conserving of waste heat, whether that waste heat be in exposed steam pipes, coming from the exhaust pipe of the engine, or is what we know as waste heat from the kilns. All heat waste is fuel waste, and throughout all the plans for alterations and improvements one should keep everlastingly in mind the need to save waste heat wherever it may be done practically from a commercial standpoint.

Labor Saving.

Next comes labor economy. Wages are high and they will stay high for some time yet or lots of trouble will be encountered in the readjustment, so wherever you can make a machine or mechanical device do work that has been done by man, go to it; in fact, go to considerable expense to get to it if necessary, for it is here, on the labor cost element, that will hinge some of the good chances for profit in the business. And it is a fortunate fact that we have already gotten a pretty good start at this work. Conveyors and carriers have been introduced quite widely the past few years to do brick handling that was formerly done by hand. Now is the time to follow up and extend this work. Make machinery and mechanical devices do as much of the work as possible all the way from the clay bank to the delivery of the finished product. Each man will find he has a distinct problem of his own in this connection, but nearly everywhere some marked improvement can be accomplished by a persistent following of the idea of making machinery do the work.

New Millwrighting Knowledge.

One of the things made evident by the present conditions all around is that there will have to be more than the usual amount of repairing, fitting up and putting in order of machinery already in hand. And here is a work where the old-fashioned millwright or all-around mechanic comes in handy, and if he is really progressive can bring into play some new knowledge and wrinkles to help out. One of these worthy of special attention is the possibilities of welding and mending broken parts of machines by the new oxygen gas process. Those gas tanks for welding have been developed to the point where castings as well as wrought iron and steel can be mended, and often the mending can be done right where they are without all the dismounting incident to ordering new parts. It will pay to look into this new welding process. Perhaps some one in the community may be prepared to do it for you, and if not that, you may find on investigation that it will pay to add a welding apparatus to your machine shop and repair equipment.

Every clayworking plant of any size should always have a qualified millwright on the job, for the wear and tear on machinery is such as to readily justify it. If you have such a man, call him into consultation, go over the situation with him and then back him up with the help and supplies he may need in his work of putting the plant in order. Also, impress upon him the imperative need of making the old machines serve wherever possible till that day comes again when plenty of new machines can be had promptly. This will mean much overhauling, some machine shop work, babbitting, the refitting of belting and a whole lot of skilled mechanical work which should be done deliberately, with care and under as favorable conditions as possible, so as not to hurry and skimp work.

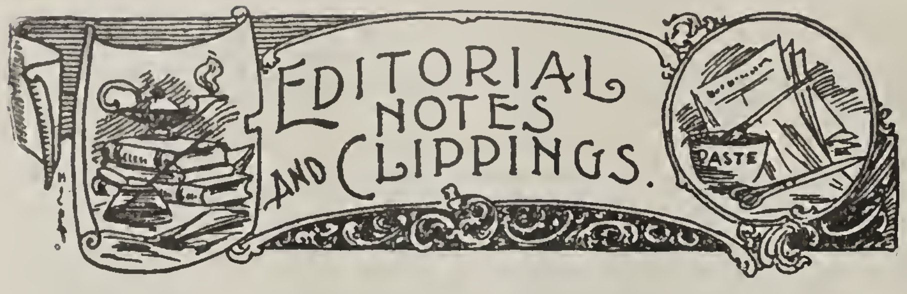
Babbitting Wrinkles.

In the work of babbitting it may be necessary to reclaim old metal, some of which will not seem good, but can possibly be improved by melting at the proper temperature and pouring into blocks for remelting. And there is some new knowledge of babbitting temperatures which should be brought into play here. It has been learned by research that the correct temperature for babbitting is 460 C., with a permissible range from 450 to 470. If you have instruments for measuring the temperature they will certainly help out here, both in restoring old babbitt and in the pouring of journal boxes.

Restoring Old Babbitt.

Often it is found that old used babbitt seems hard, coarse and crystalline. This is due to pouring at too low a temperature, and if it is heated up to 460 C. and repoured the metal will be improved. When metal is poured too hot the tendency is to produce a softening effect, so that it seems more like

(Continued on page 446.)



EDITORIAL NOTES AND CLIPPINGS.

The McKean Fire Brick Company of Mt. Jewett, Pa., has been granted a charter.

The Martin & Keefer Brickyard of Astoria, Ill., has been purchased by M. E. Reiltey.

The barn at the Howes Bros. brick plant at Northampton, Mass., was destroyed by fire recently causing a loss of $1000.

All of the brickyards at Peoria, Ill., are working over time getting out brick for a new $3,000,000 addition to the Holt plant.

The Harbison-Walker Refractorites Company, with head office at Pitsburgh, subscribed for $1,000,000 worth of Fourth Liberty Loan bonds.

Fire from an overheated kiln caused damage to the extent of $1,000 to the Shaw pottery at Trenton, N. J. The flames started in the drying room.

W. M. Probst, an employe of the North Bend Fire Brick Company, North Bend, Pa., was quite seriously injured recently when he sustained a fractured skull.

Michael P. Roenig, general contractor and builder of Amsterdam, N. Y., advises us that he is in the market for 10,000 building brick and would like prices on same f. o. b. Amsterdam.

An unfortunate accident occurred at the plant of the Kutztown Brick Company, Kutztown, Pa., when Thomas Snyder an employe had his right leg ground to a pulp in the clay crusher.

Michael Baker, Joseph Baker and C. O. Obney, of Beaver Falls, Pa., have made application for a charter for the Baker-Obney Company, the object of which is to mine and market coal and clay products.

Rolf A. Schroeder, a geologist who has been employed by the State Bureau to make examinations of clays in western Tennessee, has reported some very valuable clays for the manufacture of porcelain spark plugs, insulators, white ware, etc.

The brick plant of Henry Shenk at Erie, Pa., was badly damaged by fire of incendiary origin last month, entailing a loss of $2,000. The fire started in the roofs over the kiln and the firemen were fortunate in keeping the flames from the main building. This is the plant which was formerly owned by H. C. Dunn.

At the recent annual meeting of the Grand Ledge Baker Clay Company, Grand Ledge, Mich., the following officers were elected: President, William Schavey; vice president, John W. Ewing, re-elected; secretary-treasurer, B. D. Shane. Board of directors; J. F. Bippus and M. B. Stults, Huntington, Ind.; E. M. Briggs and J. D. Summers.

The Kahn Brick Company, Selma, Ala., write that they have a gravity conveyor system for sale, which would cost new $900, and they will take $350 for it on the cars at Selma. The system was satisfactory in every particular except for the fact that the class of labor with which they have to deal makes it impractical to try to introduce modern conveniences, and rather than pay an expensive man to stand over the employes to see that the carrier is operated, they have decided to dispose of it.

The Peebles Paving Brick Company's plant at Portsmouth, Ohio, was compelled to close down for a week on account of the influenza epidemic.

The stables of the United Refractories Company at Dunbar, Pa., were destroyed by fire recently. One horse was burned, but nearly all other movable property was saved.

The Harbison-Walker Refractories Co., Pittsburgh, has purchased three acres of land at Kittanning, Pa., on which they will erect a factory to be used chiefly for grinding fire clay.

Harry M. Price, a builder and contractor of Cincinnati, has filed a voluntary petition of bankruptcy in the U. S. District Court. His liabilities amount to 14,957.89 and his assets are placed at $14,846.36.

The name of the Rochester German Brick & Tile Co., Rochester, an old established firm of Rochester, N. Y., has filed papers changing its name to the Rochester Clay, Brick & Tile Corporation.

Harry Hamilton, an employe of the Fort Wayne Brick Co., Fort Wayne, Ind., was caught in a cave-in at the clay pit in which he was working and suffocated before fellow workmen could release him.

The Pennsylvania Clay Products Company has been incorporated to manufacture brick and other building material by Charles H. Weaver and H. R. Weaver, Wilkesbarre, Pa., and Wm. Brewer, Kingston, Pa. The company is capitalized at $25,000.

Fire of an unknown origin almost completely destroyed the Stine pottery at White Cottage, Ohio, last month. All buildings with the exception of ware room were destroyed. After it was found impossible to save the main building the attention of the fire fighters was turned to the ware house which contained over $10,000 worth of finished ware.

In a recent letter enclosing subscription, the Fayette (Mo.) Brick and Tile Company, say, "Our trade has been more than we can take care of with our present kiln capacity. We are now enlarging our semi-continuous kiln and a little later will enlarge it again. We have an up and down draft dryer and it has proven very successful, we don't lose one tile in a thousand."

Gustave M. Risacher, formerly manager of the Loogootee Brick and Tile Company, Loogootee, Ind., who entered the military service some time since, has been located at Fort Totten, N. Y. Mr. Risacher writes for information relative to the trade, saying he was formerly a close reader of The Clay-Worker, and has missed being in touch with trade conditions since he has been in the service.

The Chicago Retort and Fire Brick Co., of Ottawa, Ill., has adopted a death benefit plan which includes all its employes. Every person working at the Ottawa plant is insured by the company, the amount of insurance automatically becoming larger with the length of time the employe remains with the company. The insurance is carried without cost to the employe. If a man has been with them only thirty days, at the time of his death, they pay $250; when they have been employed at the plant six months, it changes to $350; at one year to $500, and two years $750.

The Christmas sentiment of the country started out this year toward serious curtailment, but events are working a wonderful change toward giving vent to cheerful feeling through more liberal holiday buying.

17 PRODUCERS

INTERNATIONAL TYPE-A

have been purchased by

The American Dressler Tunnel Kiln Co.

Construction of International Producers for Dressler Kilns

Why not Adapt

INTERNATIONAL PRODUCERS AND BURNERS

To Your Brick, Tile or Pottery Kilns

International Clay Machinery Co.

DAYTON, OHIO

Mention The Clay-Worker.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

SAN FRANCISCO CLAYWORKING interests are not particularly sympathetic with the war-to-the-bitter-end enthusiasts who are in favor of exterminating the German people even if it requires another year or two of bloodshed. Aside from the humanitarian aspects of the matter, brick, terra cotta and sewer pipe manufacturers feel that the necessary holding up of industry is a positive, though a necessary evil, which should be discontinued just as soon as the welfare of democracy will permit. When autocracy has been made helpless, the local trade will be the better pleased the sooner peace is proclaimed. Brick men are willing to see their business suspended for months, or even years, if thre is a real necessity, but they want building resumed along normal lines just as soon as the necessity for suspension ceases to exist.

The tying up of building as a result of the non-war building program has been rather more complete than the brick manufacturers expected a few weeks ago. Seattle, Wash., appears to be the only large city on the coast where the war activities have really been large enough to exceed the loss in ordinary building. While the October record in Seattle is less than that for September, it is still well above the million and a quarter mark and more than double Seattle's peace time monthly average.

Good progress is being made with the new plant of Gladding, McBean & Co., at Lincoln, Cal. The new works, which will replace the portion of the plant burned some months ago, will contain new economical and other features not heretofore employed on the Pacific coast. It is hoped to have the new plant in full working order by the time that the war restrictions on building, sewering, etc., are sufficiently removed to enable the big prospective demand to develop normally.

W. W. Dennis, manager of the McNear Brick Agency of San Francisco, one of the best posted men in the West on the brick and clayworking situation, has been made chairman of Group 14 of the War Service Committee for this district, the body having charge of the local brick situation for the government. Mr. McNear takes a very hopeful view of the outlook, if not for the immediate future for the after-the-war period. He says that the brick manufacturers of California are in good financial shape and have now completed all financial and industrial arrangements to keep them going through any probable duration of the present curtailment of brick and terra cotta consumption. The present outlook for peace leads him to believe that long before the present situation creates a really serious situation for the brick manufacturers, the war will be over and general business well on its way toward the normal.

Frederick R. Turton, of the Refractory Magnesite Company, of San Francisco, is now very busy at the company's mine endeavoring to get out material fast enough to fill the contracts on hand. The output goes largely to government work.

F. J. Dettenthaller, of the Los Angeles Valley Pipe Company, of Los Angeles, has returned to his headquarters in that city after a short stay in San Francisco and vicinity.

Howard Frost and G. Larsen, president and superintendent respectively of the Los Angeles Pressed Brick Company, of Los Angeles, who were in San Francisco during the latter part of October, have gone back to headquarters. While here they spent some time with the company's allied plant at Richmond on the east side of San Francisco Bay.

C. F. Pratt, of the Pratt Building Materials Company, says that while the war restrictions have put a damper on the brick demand some of the other lines are fairly active. He is filling some big orders for sand and gravel.

The Southerlin Brick & Tile Company, of Southerlin, Ore., is reported to be closing out its stock with the intention of retiring from business.

The biggest sewer pipe job now in sight is from Tacoma, Wash., where one $28,000 job and a considerable amount of smaller work is in prospect. This sewer work in Tacoma appears to have been able to pass muster as actually necessary, and the outlook is that it will be put through whether the war continues or not.

Contrary to expectations, the imminence of peace, instead of bringing relief to the brick trade, seems to have brought a further curtailment of business as its most immediate result. As a result of the cancelling of construction contracts for the Liberty shipbuilding plant and other work for the government several fair sized brick contracts will also be cancelled.

The business of clay products manufacturers were still further restricted recently by the announcement of a new ruling by the commissioner of non-war construction that the laying of sewers must not be undertaken until applications had been made and permits issued. This will, it is presumed, hold up about all of the sewer work that is contemplated.

SUNSET.

SHALE ROCK OILS.

A year or two back we were told something of the oil bearing shales as a possible source of a future supply of oil and gasoline. It was not thought at that time that any serious effort at commercial development would be undertaken in this country for many years yet, though shales have been the source of oil in Scotland for some time. But the war demands and the high prices all around have again brought the oil shales into the light of attention. We are told that several companies have been formed and are undertaking development in some of the western states where these shales are abundant.

It is said, too, that chemists are finding that a great many useful things can be made from the oil shales, including dyes, explosives, paints, fertilizers and substitutes for rubber, as well as gasoline, kerosene, paraffin and flotation oil. Admittedly, however, the industry is not yet far enough advanced to enable one to understand which if any of these things can be made at a profit in normal times.

The recently published reports of the Geological Survey touching these shales told of experiment with oil shale in the Unita basin, Utah, and gave records of tests here and elsewhere. The oil shale in Utah is black or brownish black, is fine grained, slightly calcareous, and generally free from grit.

In order to obtain its content oil shale must be mined pretty much like coal, crushed and then distilled in huge retorts by heat, in which it gives off crude shale oil, ammonia, and fuel gas, products from which may be made a large number of valuable substances. The whole question today of the probable development of shale rock products depends largely upon whether or not they can be made from this source at a profit in competition with the products from other sources. Some day we will likely have an extensive shale oil industry. but whether that day is near or far distant remains to be seen, and probably hinges some on how soon peace returns to the world.

The business man who isolates himself and fails to attend association meetings, likewise fails to get the full measure of success and satisfaction out of his business that he is entitled to.

DEPENDABILITY IN PERFORMANCE IS THE STRIKING CHARACTERISTIC OF

THE UNDERWOOD PRODUCER GAS BURNING SYSTEM

(Patented)

YOU CAN DEPEND UPON IT TO

Save Much in Fuel
Save Much in Labor
Give Ideal Burning Conditions
Reach Any Necessary Temperature
(2600° to 2800° is easy)
Possess a Host of Other **Real** Advantages

The above are reasons why every thinking, progressive Clayworker should investigate the system.

Moreover, every producer of Clay Products who takes into serious consideration the drastic fuel restrictions of the Government, must see in this system the one true method of burning clay products economically, and in accordance with the Government's mandates to conserve fuel.

Again, do not lose sight of conditions which will prevail after the war. Our experience now teaches us how vital it is to conserve fuel and labor, and the only way in which we can profit by this lesson is to prepare by installing dependable, economical appliances, and for the burning of clay products the Underwood system is the one best bet.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-Working Machinery.

PERRY & DUKE,
Canadian Representatives,
841 College St.,
Toronto, Ont., Canada.

PUTTING THE PLANT IN ORDER.

(Continued from page 441.)

lead. Generally when only an open fire is being used the fault is pouring metal too cold, while if a forge is used for heating, overheating may result, though this really occurs less frequently than underheating, even with a forced fire. The experienced millwright, who tests his heated metal with a splinter of wood, can generally gage the temperature pretty well from experience and judgment without a temperature measuring instrument. For him the main thing is to keep in mind the importance of right temperature. For the less experienced man a temperature measuring instrument should be sought.

And while we are on the subject of babbitting, here is a wrinkle worth keeping in mind. After you pour a box, if you will leave it stand with the shaft in it till it is thoroughly cold—say over night—it will prevent that shrinkage of the babbitt in cooling which makes necessary a lot of dressing out of the box to prevent it pinching the shaft and running hot. The common practice is to open up the box as soon as the metal has hardened and get busy at once dressing out and fitting. Try changing from this. Get a lot of babbitting ready to do at once, then do the pouring and let the work stand over night before opening up. You will find that it lessens the work of fitting and makes a better job generally.

WESTINGHOUSE WENT "OVER THE TOP" WITH FOURTH LIBERTY LOAN.

FOR five minutes, starting at 11:45 Saturday, October 12, the whistles of the Westinghouse industries in the Pittsburgh district proclaimed that the men and women of these companies, had again demonstrated their loyalty, patriotism, and good common sense by greatly oversubscribing their quota in the Fourth Liberty Loan, the grand total for the Westinghouse interests being $6,500,000.00, of which amount approximately $5,500,000 was subscribed by employes of the Westinghouse Electric & Manufacturing Company and its subsidiaries.

An intensive campaign was carried on in the different works, and noon hour meetings were held every day. Four bands, all made up of Westinghouse men, enlivened interest and stimulated patriotism. In addition, a community chorus of 200 voices, a male chorus of 20 voices, and a number of male quartets and soloists were utilized to keep up the spirit of the campaign.

A large Victory arch was erected on Fifth Avenue, Pittsburgh, and was dedicated with appropriate ceremonies, including a concert by the Westinghouse band and a stirring address by Edward O. Tabor, who spoke under the auspices of the Pittsburgh Liberty Loan Committee, and said:

"We have come here tonight to dedicate this Westinghouse Liberty Loan Arch of Victory. The Westinghouse Companies employ 45,000 men, and the goal of these men is five millions of dollars. The thermometers which you see on the supports of the arch will register the cash subscriptions by those companies, and today on the second day of the drive the total has already reached one million, five hundred and eleven thousand dollars in cash.

"Ladies and gentlemen, I want you to notice the arch before you. On the left you find the column which represents manhood. On the right is the column representing money and materials. Across the top is the arch of industry, and its keynote is loyal service. On each column is a thermometer which registers not only money, but enthusiasm, earnestness and confidence, and I want you to remember two things, that as this thermometer indicates a rising subscription and a rising enthusiasm in America, it will also register a rising fever in Berlin, and if our American thermometers rise high enough. the fever in Berlin will rise and rage until the kaiser and all his hellish hordes will be consumed, even as Bulgaria and Turkey are consumed today.

"This arch is the Arch of Victory and Triumph. At the head of the column on the right we see the symbol which represents the soldiers and sailors of the United States. At the head of the column on the left there is the symbol of war and victory, and in the center of the arch is the symbol of work. Soldiers and sailors, and money and work will bring us victory and success.

"If the thermometers register a hundred per cent—yes, if the thermometers go over the top—and they will—this very arch will be built at the gates of Berlin, and under its triumphant dome shall march the troops of Uncle Sam and all his allies, in order that they may carry freedom and justice to all peoples of the world, be they large or small.

"The loans in the past were used to send soldiers to France. By the help of God they are there, and no one knows it better than Kaiser Bill himself. Our soldiers are there—now they must be helped. They need food—they need clothes—they need guns and ammunitions. To supply them with these necessities, we must oversubscribe this fourth great loan in order that Uncle Sam may help Belgium and France and England and Serbia, the Czecho-Slovaks and Italy—yes, and Russia, too.

Thousands of the Westinghouse employes are of foreign birth. In the past they have been 100 per cent. and we must rest assured that these thermometers will find them 100 per cent. plus in this loan, too. But these thermometers do not register merely the loyalty of the Westinghouse employes. They register the loyalty of every American in the United States. Ladies and gentlemen, as you pass by these thermometers from day to day let them tell you that they are registering your loyalty, your enthusiasm, and your confidence. It is in that spirit that these Liberty Loan thermometers are dedicated here tonight upon this Arch of Triumph; they are dedicated to the cause of liberty throughout the world."

W
WESTINGHOUSE INDUSTRIES LIBERTY LOAN
WESTINGHOUSE ELECTRIC & MFG. CO. WESTINGHOUSE AIR BRAKE CO. UNION SWITCH & SIGNAL CO.

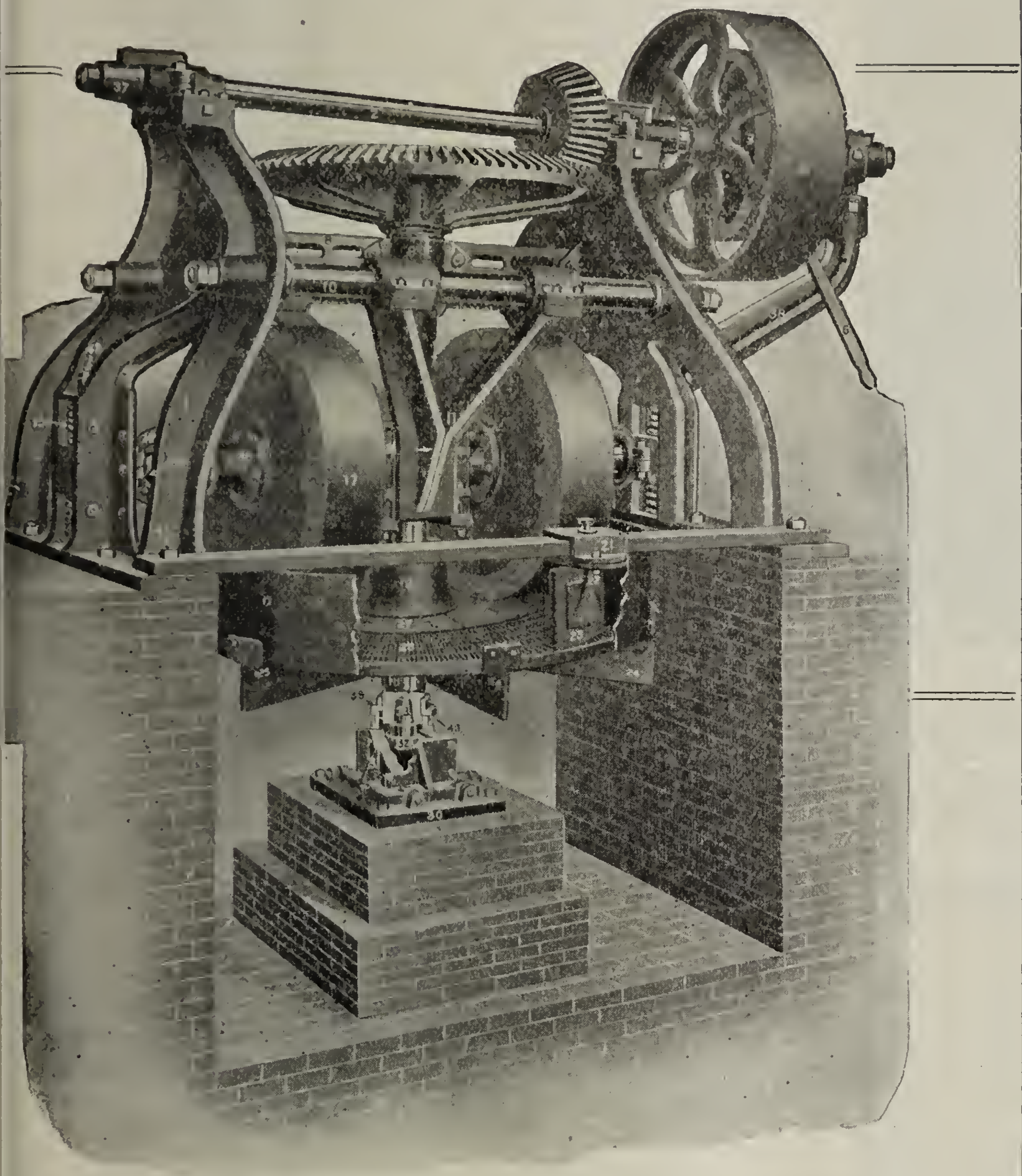
Victory Arch on Fifth Avenue, Pittsburgh.

The Victory Arch attracted much attention, and as the campaign progressed crowds of pedestrians stopped to watch it and wonder how soon it would show that these companies had gone "Over the Top." The ban on public meetings and parades necessitated by the epidemic of influenza, prevented any public demonstration when the objective was finally passed.

The campaign was carried on with the greatest enthusiasm at the various works in this district and a great parade was held in East Pittsburgh at the noon hour on Friday, October 4, in which were featured the departments of the works which had subscribed 100 per cent. of their quotas. The parade ended in two immense meetings on the company's lawn. Smaller parades were held daily by the various sections of the works and the super-Hun would have shivered in his boots had he seen his various effigies and the complimentary (?) assignments given him by the artists and poster writers in the different portions of the works.

One thing was clearly demonstrated throughout the campaign—for intense loyalty to our government in prosecuting the great war for world wide democracy, the men and women of the Westinghouse organizations are second to none, and fully realize their responsibility in standing back of the thousands of Westinghouse men and women who are now in the national service.

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

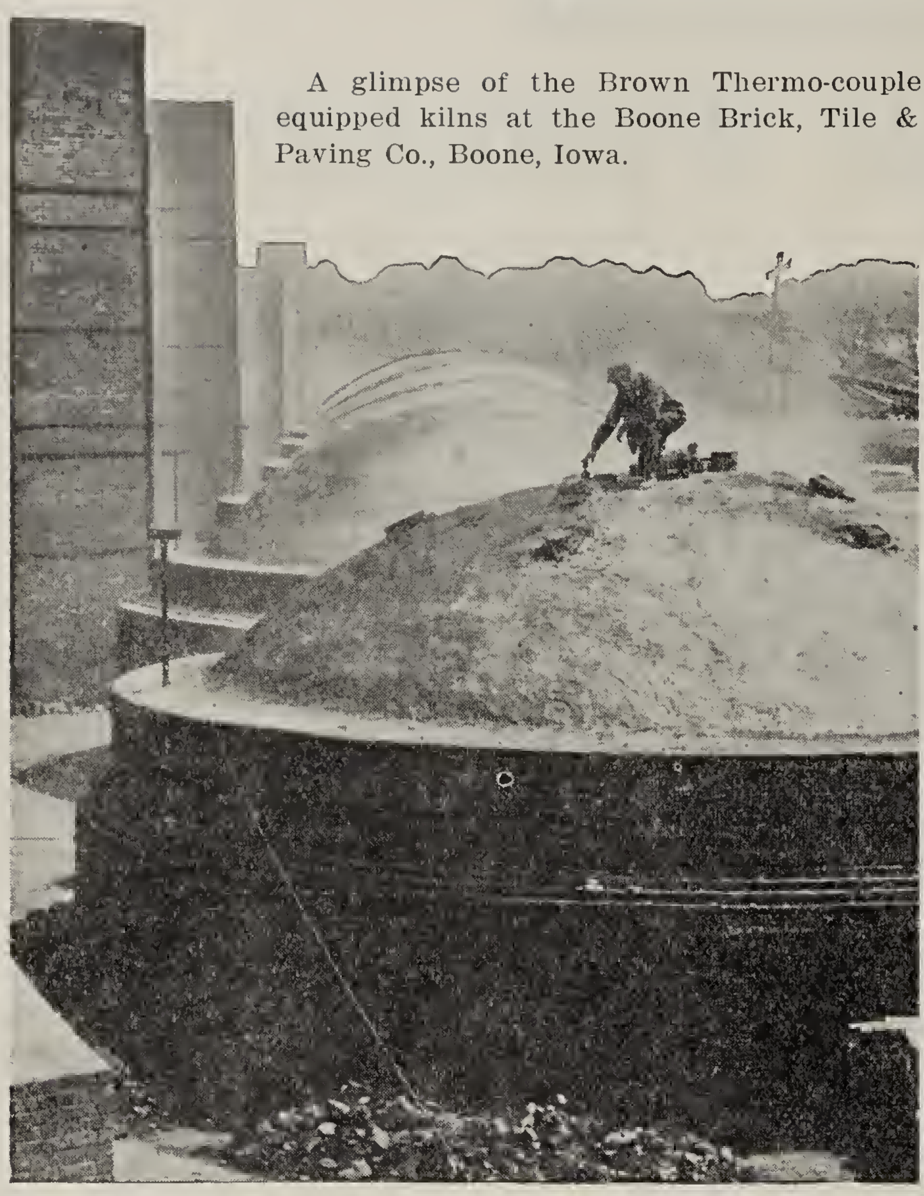
Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

Write for further information and catalogue.

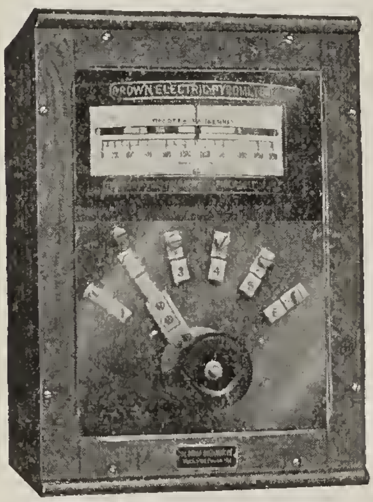


A glimpse of the Brown Thermo-couple equipped kilns at the Boone Brick, Tile & Paving Co., Boone, Iowa.

Brick Plant Efficiency Today Demands Accurate Knowledge Of Kiln Temperatures

That's why big brick plants like "Boone"—shown here—use Brown Thermo-couples in every kiln, a Brown Indicator to tell the temperature of every kiln and a Brown Recorder for a temperature record of every kiln at high heat.

That's why these 300 big brick plants already using Brown Pyrometers know positively the substantial saving in labor and coal and the big percentage of A-1 ware a Brown Control means. Today, right now, when every pound of coal counts, is the time for you to put in Brown Pyrometers. Let us send you some convincing facts to prove this. Write to the Brown Instrument Co., Philadelphia, or any of their district offices in New York, Pittsburgh, Detroit, Chicago or St. Louis, for complete information.



Brown High Resistance Indicating Pyrometer with 6 point switchboard for use with 6 thermo-couples.

Brown Pyrometers

SOME POTTERY MILESTONES.

The detailed report of the U. S. Geological Survey on pottery production in 1917, which is now available, shows among other things that during the war period the pottery industry set up for itself some milestones of attainment along the road of progress. The distinctive new features are: the establishing of a high grade pottery industry in the south country, the making of bisque doll heads on a commercial scale, and progress in the making of chemical porcelain.

The total value of the pottery production for the year was $56,162,522, an increase of $7,945,280, or more than 16 per cent. as compared to 1916. This is a splendid showing even though it came in a good measure from increased value rather than from an increase in quantity. It makes the pottery total now more than a fifth of the grand total of clay products, and best of all it shows distinct progress. Some of the progress was stimulated by war condition, but not all, some of it was plainly made in spite of war conditions.

The demand for pottery was good, the imports being cut down so that we had to supply practically all the domestic trade and also take care of a larger demand from the outside world.

Methods Improved.

A good feature of the year was in improved methods of manufacture, even in the face of the handicap of war conditions. Realizing that after the war he will have the keenest competition, and knowing that in order to hold his present trade he must not only make ware of superior quality but must be able to undersell all foreign competitors, the American potter has begun to study not only how to improve the quality of his ware but to find or devise labor-saving machines and improved kilns. The report of the United States Potters' Association shows that a number of such devices that give promise of lowering the cost of labor and fuel were introduced in 1917 or were being successfully developed. Among these devices are sagger-making machines, a conveyer type of stove, a casting process that makes large production possible by unskilled labor, and downdraft and tunnel kilns that insure a large saving of fuel.

High-Grade Pottery Now Made in the South.

The effort to establish in the Southern States a pottery for the manufacture of high-grade ware has, after many years, at last been successful. In 1917, for the first time, white ware was manufactured in the South. The Southern Potteries (Inc.), began to operate at Erwin, Tenn., a 10-kiln plant for the manufacture of semi-vitreous porcelain table ware, using domestic clays exclusively.

A Factory for Making Dolls' Heads.

Another milestone in the pottery industry in this country was the establishment in 1917 at East Liverpool, Ohio, by Mr. Ernst Reinhardt, of the Bisc Novelty Co.'s pottery for making bisque doll heads. Since the imports of toys from Germany have been cut off efforts have been made with more or less success, to produce dolls and doll heads of various materials, but it remained for Mr. Reinhardt, formerly connected with the doll-head making industry in Germany, to produce bisque doll heads on a commercial scale in the United States. Mr. Reinhardt started his work in a small way in Philadelphia soon after the war began, and in 1917 he removed to East Liverpool, Ohio, where, if his plans are carried out, bisque doll heads will be made in large quantity.

New Products and Increased Production.

Another important development in the pottery industry of the United States is the production of chemical porcelain; the manufacture of which in this country was considered impossible before the war. Several operators are now making chemical porcelain which satisfactorily meets the exacting requirements of the laboratory.

In 1917 the value of the output of every variety of pottery classified by the Geological Survey, except red earthenware, was greater than in 1916. White ware showed the largest increase—$2,729,079, or 15 per cent. Porcelain electrical supplies also showed a large increase—$2,417,166, or 34 per cent. China, the highest grade of pottery, has been a minor product in value, yet its value in 1917 showed an increase of $1,327,534, or 38 per cent., compared with 1916. Its value in 1917 was nearly twice as great as in 1913.

The value of white ware, including china, which comprises the general household wares and constitutes more than 45 per cent. of the value of all pottery, was $25,726,375 in 1917, an increase of $4,056,613, or 19 per cent., over 1916. If to this sum is added the value of the high-grade products sanitary ware and porcelain electrical supplies, the total value in 1917 was $47,814,178, or $7,998,579 more than in 1916.

Principal Producing States.

In 1917 one state, Florida, was added to the 37 states already producing pottery. The value of the wares made ranged from $21,353,706 in Ohio to a few hundred dollars in Montana and Porto Rico. The value of Ohio's pottery products in 1917 increased $1,912,173, or nearly 10 per cent. over that of 1916, and constituted 38 per cent. of the value of the output of the entire country. Ohio's principal product is white ware, the output of which in 1917 was valued at $13,222,826, or 62 per cent. of the value of the state's entire output, and nearly two-thirds (63 per cent.) of the value of the output of white ware in the United States. New Jersey is the second largest pottery-producing state, its pottery wares marketed in 1917 being valued at $12,535,843, which is 22 per cent. of the value of the product of the entire country, and an increase of $1,470,965, or 13 per cent. over the value in 1916. New Jersey's principal product is sanitary ware, the output of which in 1917 was valued at $7,202,671, which was 57 per cent. of the value of its entire pottery output in that year and the same percentage of the value of the sanitary ware produced in the whole country. New Jersey is the principal producer of china but is closely followed by New York. West Virginia was third in rank among the pottery-producing states in 1917, its marketed pottery wares in that year being valued at $7,243,900, an increase of $1,463,047, or 25 per cent. over 1916. Its principal product is white ware, valued at $4,421,017. In 1917 New Jersey, Ohio, and Pennsylvania each reported every kind of pottery classified in the report of the Geological Survey, and New York reported every kind except stoneware.

JUST AMERICAN.

Just today we chanced to meet—
Down upon the crowded street;
And I wondered whence he came,
What was once his nation's name.

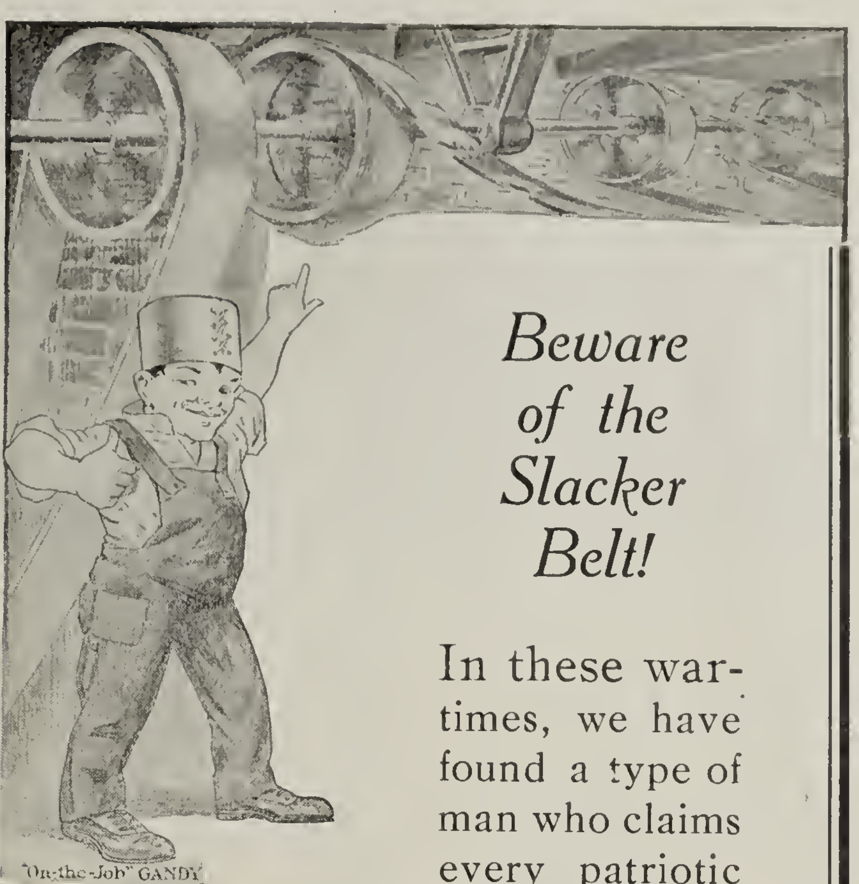
So I asked him, "Tell me true,
Are you Pole or Russian Jew,
English, Scotch, Italian, Russian,
Belgian, Spanish, Swiss, Moravian,
Dutch or Greek or Scandinavian."

Then he raised his head on high,
As he gave me this reply,
"What I was is naught to me,
In this land of Liberty;
In my soul, as man to man,
I am just American."

—Author Unknown.

MR. BATLEY TAKES UP NEW POSITION.

Alex A. Batley writes that he has moved to Table Rock, Neb., where he has taken charge of the Table Rock Brick & Material Company, where they are making silo and building tile exclusively. Mr. Batley says he will be at the next N. B. M. A. convention, no matter where it is held.



Beware of the Slacker Belt!

In these war-times, we have found a type of man who claims every patriotic virtue, yet tries to dodge every responsibility.

In the language of the street, he's a slacker.

You'll find slackers in the transmission equipment family, too.

Sometimes they masquerade under the good name of *GANDY*--at other times they get past on the "just as good as *GANDY*" dodge.

But a slacker belt won't stand up any longer then a human slacker--neither can stand the pace.

GANDY is always on the job ready for any service or emergency that may arise and he always flies the colors of his own trademark.

Write for list of *GANDY* stock and odd size belting ready for immediate shipment.

Look for the Green Edge and GANDY Trademark.

"On-the-Job" *GANDY*
Service Manager

THE GANDY BELTING COMPANY
749 West Pratt Street BALTIMORE, MD.
New York Branch, 36 Warren St.

GANDY BELT
Stitched Cotton Duck

INDEX TO ADVERTISERS

Alton Brick Co.................... 396
American Clay Machinery Co., The.......................... 439, 440
American Process Co............ 456
Anderson Foundry & Machine Works.......................... 392
Arbuckle & Co.................... 393
Baird Machinery & Mfg. Co...... 472
Ball Engine Co..................... 456
Barr Clay Co., The............... 396
Books for Clayworkers 463
Bonnot Co., The................... 387
Boss, John C....................... 450
Brewer, H. & Co................... 467
Brown Instrument Co., The..... 448
Caldwell, H. W. & Son Co....... 453
Cameron Clay Products Co..... 396
Carnell, George.................... 457
Chambers Brothers Co.......... 399
Chase Foundry & Mfg. Co........ 472
Chattanooga Paint Co........... 454
Chicago Brick Machinery Co,... 472
Chisholm, Boyd & White Co..... 390
Danville Brick Co., The.......... 396
Dickinson, W. W. Jr............. 398
Didier-March Co 389
Drying Clay Wares.............. 459
Eagle Iron Works................ 457
Eastern Machinery Co., The.... 462
Engelhard, Charles.............. 455
Fate, J. D. Co., The 471
Flint River Brick Co............. 470
Frost Mfg. Co., The.............. 469
Freese, E. M. & Co............... 468
Gandy Belting Co................. 449
Geijsbeek Engineering Co....... 455
Hamilton & Co., W. E........... 270
Harrington & King Perforating Co.............................. 388
Important Federal Laws........ 456
International Clay Machinery Co. 443
Kushequa Brick Co.............. 396
Kushequa Keramic Co........... 396
Lake Shore Shale Brick Co..... 396
Lakewood Engineering Co...... 472
Lovejoy, Ellis...................... 461
Mantel, Tile and Grate Monthly. 453
Manufacturers Equipment Co., The............................. 445
Marion Machine Foundry & Supply Co........................... 450
Mathews Gravity Carrier Co.... 388
Mayer, C. P........................ 397
McAvoy Vitrified Brick Co...... 396
Medal Paving Block Co.......... 396
Metropolitan Paving Brick Co.. 396
Mittler Wire Mfg. Co............ 458
Murphysboro Paving Brick Co.. 397
National Paving Brick Manufacturers' Association............. 396
Ohio Galvanizing & Mfg Co., The 457
Parker-Russell Mining & Mfg.Co. 454
Phillips & McLaren Co........... 453
Potts, C. & A. Co................. 464
Purington Paving Brick Co..... 397
Ricketson's Mineral Paint Wks. 457
Roessler-Hassslacher Chemical Co, The........................ 454
Schurs oil Burner Co...... 364
Standard Dry Kiln Co., The.... . 400
Steele, J. C. & Sons.............. 386
Stevenson Co., The.............. 447
Terre Haute Vitrified Brick Co.. 397
Thwing Instrument Co........... 456
Tile Underdrainage.............. 396
Toronto Foundry & Mach. Co... 458
Wallace Mfg. Co.................. 466
Webster & Kincaid............... 460
Westinghouse Electric Mfg Co.. 306
Williams, C. K. & Co............. 454

SEE TABLE OF CONTENTS ON PAGE 438.

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Drying and Burning

BOSS TEN-HOUR DRYER

Use either waste heat or exhaust steam.
No live steam. No direct firing.

BOSS SYSTEM OF BURNING BRICK

Applies to all types of kilns and will save HALF in your cost of burning.

Let us save Time and Money for you

JOHN C. BOSS CO.
Monger Bldg., Elkhart, Indiana

YOU HAVE KNOWN FOR YEARS THAT

RICKETSON'S MORTAR COLORS

are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.

Why Not Insist on Having Them?

They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.

Red, Brown, Buff, Purple and Black.

RICKETSON MINERAL PAINT WORKS
MILWAUKEE, WIS.

Tempers Clay Perfectly—Improves Product—Speeds up Plant

Will help you get full capacity out of your dry pan, pug mill auger—insure a regular delivery to your off-bearers, and also cuts out labor of two men.
Ask for Rust Bulletin.

MARION MACHINE, FOUNDRY & SUPPLY CO.
P. O. 156, MARION, IND.

VITRIFIED PAVING BRICK

A valuable treatise on the manufacture and use of Paving Brick up to date. By H. A. Wheeler, E. M. Second edition.

Mailed to any address on receipt of $2.00.

T. A. Randall & Co. (Inc.) Publishers
Indianapolis

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

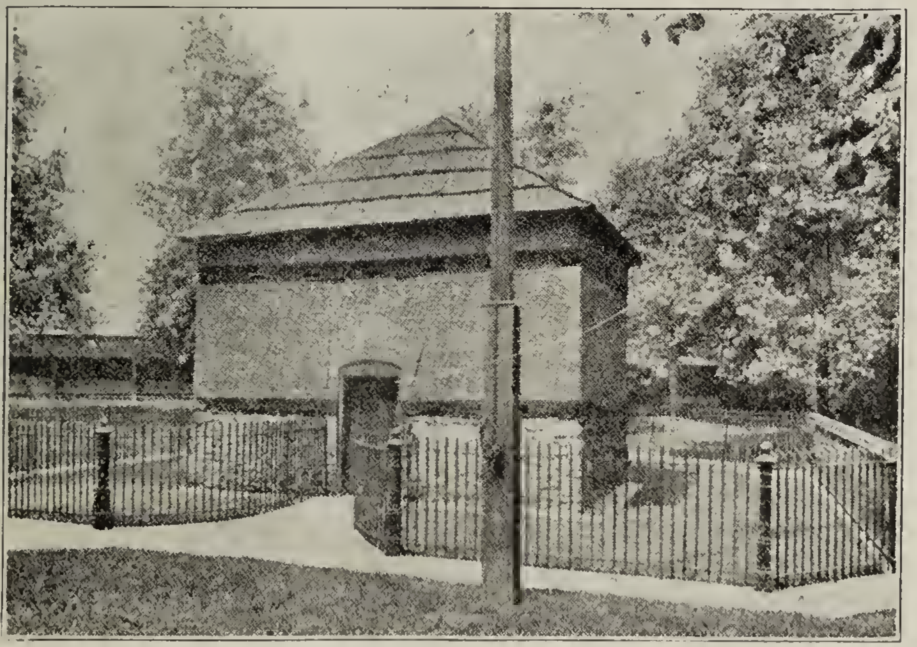
Vol. LXX. INDIANAPOLIS, IND., DECEMBER, 1918. No. 6.

PITTSBURGH THE CONVENTION CITY

POINTS AND THINGS of Interest in and about "The Armory of the Nation" Where Clayworkers Will Assemble February 2d to 8th, 1919 to Participate in the Thirty-third Annual National Convention.

AROUND A LITTLE BRICK BUILDING—the Block House at Ft. Pitt, erected by Col. Henry Boquet in 1764—has grown one of the mightiest cities of the Western Continent. This little brick fort of dimensions not exceeding twenty feet, was the first structure of brick erected west of the Alleghanies. It has withstood the ruthless hand of time, the destructive forces of the elements and the missile of the invader, and stands today as staunch as when the British masons finished their task 154 years ago. This little brick fort commands the junction of the Allegheny and the Monongahela rivers, where they form the beautiful Ohio, and the mighty city round about is the industrial metropolis of Pittsburgh.

Around this pioneer monument — a memorial alike in historic significance as well as the skill of the clayworkers' handicraft—will gather in February next, the modern clayworkers of America, who will attend the thirty-third annual convention of the National Brick Manufacturers' Association of the United States. A sentimental interest attaches to the forthcoming meeting. This pre-eminently will be a peace convention, when members of the National Brick Manufacturers' Association and affiliated organizations will prepare for the important era in the building industry, which is certain to follow the close of the war. Nearly 1,000 delegates and visitors are expected to attend.


The Famous Brick Fort or "Block House" Erected at the Junction of the Monongahela and Allegheny Rivers in 1764.

Pittsburgh, the first city in industrial importance in North America, and the fifth metropolis in population, has won a new distinction. It is justly termed "The Armory of the Nation." Its strategic position on the western slopes of the Appalachian Mountains at the head of the Ohio River, makes it the natural gateway between the east and the west. For 150 years it has been regarded as a key in the transportation routes between the Atlantic seaboard and the great west. Today it is the geographic center of more than one-half of the population of the country. It is within one night's ride of 45,000,000 people.

Pittsburgh is a historic city. Indian traders in the first half of the eighteenth century came to the region about the confluence of the Monongahela and Allegheny Rivers, and "The Forks of the Ohio" was a landmark well known when Major George Washington, in 1753, visited the place on his memorable journey to the French on the Venango. Early in the following year, a small band of British sought to erect a stockade at the Forks but were driven off by the French who came down from Canada and built Fort Duquesne. The same year Major Washington, at the head of a detachment of provincial soldiers, directed the first shot on the French and Indians in a skirmish which began the conflict resulting in the French and Indian war. After years of bloodshed the map of the world was changed at this place. The British captured Fort Duquesne and erected in its place Fort Pitt, around which grew up the nucleus of the future city named Pittsburgh, by General John Forbes (November 25, 1758), in honor of England's prime minister and friend of the American colonists. Then followed a great influx of English and Scotch-Irish pioneers.

In 1794 Pittsburgh was incorporated as a borough and the census of 1800 showed a population of 1,565. Its position at the head waters of the Ohio made Pittsburgh an important point and outfitting station for colonists on their way to the west and the southwest.

Pittsburgh was incorporated as a city in 1816, and during the following decade its population was doubled. Each decennial census showed Pittsburgh to be one of the most rapidly developing cities in the country.

The opening of coal mines led to the establishment of numerous factories. Before the end of the century an iron furnace was in operation and the first glass house had been built. In 1811 the first steamboat to navigate the western rivers was launched here by Livingston and Roosevelt. In the War of 1812, Pittsburgh was called upon to furnish a large amount of munitions used by the American armies in that struggle. Before its close, the Allegheny Arsenal had been established and for three-quarters of a century was one of the important armories of the nation.

Rated by the volume of its tonnage and the abundance of its raw material, Pittsburgh's claim to industrial supremacy is unchallenged. Old King Coal has been called the pater families of Pittsburgh's industrial wealth. Today the output of coal in the Pittsburgh district is more than one-third of that produced by the entire coal fields of Great Britain. In coke products Pittsburgh has no rival. Natural gas came into use as a fuel as early as 1868, but it was not until 1883 that it was adopted for practical purposes. Today about 40 per cent. of the natural gas developed in the United States flows from the territory immediately adjacent to Pittsburgh. Likewise, Pittsburgh is the metropolis of the Pennsylvania petroleum district and the beginnings in the old industry enriched Pittsburgh.

Pittsburgh pre-eminently is a convention city. Its geographical situation, being within a one night's ride of more than half the population of the country, places it in a strategic position for bringing together large commercial gatherings as well as affording an opportunity as an ideal place for the assemblage of patriotic organizations, educational and scientific bodies and fraternal societies.

Nearly 100 conventions were held in Pittsburgh during the last year, bringing to the city about 125,000 delegates and visitors. Besides assembly rooms in Pittsburgh's civic buildings, a magnificent exhibition hall is provided in the mammoth iron and glass structure of the Mechanical Building of the Western Pennsylvania Exposition Society. Through special arrangements with the municipal authorities, this auditorium is given free of charge for commercial exhibitions held in connection with conventions, this provision being an inducement offered by the Chamber of Commerce.

Any brief discussion of the industrial life of Pittsburgh necessarily suffers disadvantage because of the vastness of the industrial activities in this great center of supply. Nor is it easy to confine such a resume to the description of any well defined area. The true Pittsburgh is not a city of prescribed municipal boundaries, but consists rather of a huge group of integral units, centered around the main body—the city of Pittsburgh the financial, social and educational hub of the community.

Nor is the wealth of metropolitan Pittsburgh dependent alone upon the manufacturer. The city is the center of an immense jobbing trade, supplying over 10,000,000 people and counts its annual business above the billion mark. A single item is an illustration: Pittsburgh is the third city in the country in the distribution of fruits and vegetables. During 1916 this city received more than 40,000 carloads of such produce and of this number 25,000 carloads were used in the metropolitan district.

The Pittsburgh manufacturing district embracing activities within a radius of 40 miles, furnished items of production on so vast a scale as to stagger the imagination. As a producer of raw materials, this territory stands pre-eminent in the world. With census figures as a basis, it has been found that the manufacturers of the United States are dependent upon the Pittsburgh district for their raw materials in the following ratios:

Product.	
Agricultural Implements	44%*
Hardware Products	45%*
Automobiles	45.7%*
Machinery (all kinds)	37%*

Pittsburgh takes a leading place among the scientific centers of the world for industrial and technical study and research. The testing stations of the United States, Bureau of Standards and Mines, Geographical Survey, has been established here, and have equipment for special investigations provided for testing of glass, brick, cement, concrete and structural steel. Here likewise are the headquarters of the Mines Safety Conference of the United States Bureau of Mines, which conducts tests of coal and all mined gases.

The William Penn Hotel, Pittsburgh, Headquarters N. B. M. A. Convention, February 2-8, 1919.

At the Carnegie Institute of Technology are special laboratories provided with costly equipment for the testing of building material, including stone, brick, cement, concrete, steel, etc. Here also is the Mechanical Engineering Laboratories for the testing of machinery and the adjustments of weights and measures.

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* Per cent of raw materials from Pittsburgh district.

Pittsburgh has hotel facilities to care for 3,000 transients daily. These hostelries, located in the suburban districts as well as in the business section, are unsurpassed. The Ft. Pitt Hotel continues to be one of the most popular hostelries in the country and the New William Penn Hotel is among the largest and finest equipped hotels in the world. Here the clayworkers of the nation will gather February 3, 1919, to participate in what is anticipated will be the most important meeting of the clay craft yet held. Pittsburgh's gates are open and a cordial welcome awaits every visitor.

Pittsburgh's the Place.

There is a peculiarly fitting appeal in the fact that Pittsburgh, which has been the center of War activities, should be the place selected for the next gathering of the brick clan, for it makes it a sort of center of peace activities. Thoughts of peace immediately bring forth ideas about reconstruction and a resumption of building operations generally. And where building is in contemplation clay products are the logical things to be in the foreground. It was Pittsburgh, the war center, but now it is Pittsburgh for a Peace Convention. Let every clay worker far and near mark the date and make up his mind to be one in the midst of what promises to be one of the greatest N. B. M. A. conventions ever held. It is Pittsburgh, Pa., February 2 to 8, 1919.

Pittsburgh's "Bridge of Sighs," Connecting the County Buildings.

UNIFORM COST ACCOUNTING.

The main plea to be made right now for cost accounting is for uniform methods. This will not make the cost uniform as between different plants, but it will lead to a better understanding all around. That is worth something to each man in the trade, but that is not all, nor even the main part of the argument. It paves the way to better understanding on the part of your banker, and this makes it a mighty good thing to have when there is need to borrow money.

NEW YORK AND VICINITY.

NOT much business in brick is in progress now, while fire proofing and other structural material made of clay is suffering similar neglect. It is not the season for active operations in building. Furthermore, conditions are worse now than commonly, because new buildings were started during the warmer weather to be finished after cold weather began. A few are undergoing changes and here and there a new one is in process of erection, but speaking in a general sense the situation is not promising for real estate men nor for builders. Those who make and furnish the material are suffering similarly.

Prices of common brick in New York are around $14.00 per 1,000. One week they are quoted as low as $13.50, and the next week they may be up to $14.00 or $14.50. In a few instances they have sold as high as $15.00, but the fortunate holders who have sold at that figure are few.

In a general way, however, the outlook is better and the present discussion of new projects encourages brick dealers and manufacturers to expect something approaching a normal year next season. It is impossible to determine from present indications just what will take place, but it is certain that conditions will be better than they have been for the past two years, even though material and wages are both to continue high.

All activities have ceased up the river for the season. The yards did not operate to anything more than a fraction of their capacity the past summer and a larger part of those that did open were closed early. Help was scarce, orders were few and transportation practically imposible. With all restrictions removed manufacturers are looking forward to the coming year as an opportunity to recoup some of their losses during the two years just passed. The Hudson river district has not maintained its output by a great many millions for the past three years and full capacity will be required to enable them to turn out what they need for their present requirements, or what they hope will be present requirements. Much is conjecture, of course, but it looks so much better than it did that makers are anticipating a heavy business all next season.

BURTON.

PEACE-TIME PLANS.

The industrial, commercial and financial world is now turning very earnest and active attention to peace-time plans. And to quite an extent these include an enlarged program for export, an entering into a sort of commercial war for the world's trade. This world-wide view, while it holds some interests for the clay workers, should not, so far as this industry is concerned, be allowed to interfere with home matters. Brick making is largely a domestic matter, and this is true of all the clay products entering into building operations. There is some export trade, and it can be extended somewhat, but at best it is a small and insignificant matter as compared to the domestic trade. Let us keep this fact before us in making peace-time plans, that it is the home trade we are really interested in and want to see built up and maintained. And there are bright prospects before us in the outlook. The building material of the future will be much more of the permanent class, a class in which burned clay shines.

If you are planning repairs and alterations in your plant get at it early that you may have time to do it right.

THE CALL TO BUSINESS.

Now is the Time For All Good Men and True to Take Heed of the Needs of the Day and to Join the Army of the Up-and-Doing.

THE NEW DAY HAS COME, the new era of opportunity for which we have been looking forward. From all corners of the earth and from all walks of life there is going forth a great call, a call to business, a call for those in every line of peaceful endeavor to join the ranks and fall in line for action. Gigantic plans for reconstruction are in the air, great schemes for industrial enterprise and trade conquest are being perfected, and a general air of bustle and preparation for the energetic pushing of peaceful pursuits pervades the whole civilized world. Never before in the history of the world has the coming of a new year found so much of pending enterprise and of promise for future accomplishment. For that and all the other reasons that go with the order and the doings of the day, it is a time to send out a clarion call to the clayworking industry, a call to business, and to the task of putting things in shape for a full participation in the great times ahead.

A Time For Stock Taking.

Have you given thought to the subject of what all the doings means or may mean to the clayworking industry? If not, it is high time to hear and harken to the call to business. It is a time for the industry to take stock of the situation and of its preparedness to meet the probable needs and opportunities of the new era. Nor is it enough for each man to take stock of his own institution and surroundings, but all should compare notes and take stock together of the broader aspects of the whole situation. It is pre-eminently a time for attending conventions and conferring together for new light and a better understanding of what is and what may be before us, and it is a time in which those attending conventions should give some thought to the matter in advance that they may be prepared with question and data that will assist in reaching definite conclusions. It is a time for energy, optimism and to be up and doing things.

Four Divisions For Action.

In connection with the clayworking industry itself we may well lay out four broad divisions for study and action, as follows:

1. Manufacturing.
2. Transportation.
3. Selling and Exploitation.
4. Use of the Products.

Beginning with the subject of manufacturing we find that it can be easily subdivided into several heads like that of mining or excavating, transporting to the plant, mechanical manipulation in the plant, drying, burning and removing from kilns. In transportation we have the motor truck as a new factor, which easily merits more attention than it has been getting from the clayworking industry.

In selling and exploitation there is a big field of possible effort that has hardly been touched in which we need some exchange of ideas, and above all a stimulating of more action. And following this, as wider interest in the use of clay products is aroused there will be need for many more men qualified to do the work. We will need more bricklayers, more brick contractors, and the interest in this is so direct that the industry may well lend encouragement and give aid in developing an army of brick constructors.

At the Manufacturing End.

The subject of manufacturing, of acquiring knowledge of better methods through research work, through the exchange of personal experience and ideas, is one which has been closely identified with the National Brick Manufacturers Association ever since its inception, and never before has there been an occasion of more imperative need to attend and participate in the gatherings of this body than is being offered right now in the annual convention booked for Pittsburgh the first week in February. It is important that every possible improvement be introduced into manufacturing that will make for increased production and cost saving. Values have gone so high all around that the use of structural material is threatened with some curtailment because of the increased cost. And it makes an opportunity for the brick men, if through the use of labor saving devices and improved burning methods they can moderate the price of their product, to extend more widely the use of brick in competition with other structural material. Stress may well be laid on the cost saving of it at this time, for the quality is there in the main, quality never known before in brick in any country, and quality which makes our brick and tile the best building material on earth. So while we must, of course, always keep the quality in mind, it is toward labor and cost saving that we should direct the main efforts just now, and at the gathering of the clans will be the best time and place of the year for effort of this kind.

The Matter of Transportation.

In transportation there is not only the truck factor offering much of interest for study and the exchange of ideas and experiences, but there is the present condition of things in the railway world, and the question of what to do about it, and the question of inland waterway development. Freight is an important item in the distribution of clay products, especially if they go to any great distance. And this raises a question of territory and distribution, of how much in the way of freight charges may be saved by more diligent effort on the part of manufacturers to develop business in the nearby territory, thus saving freight for themselves and competition for some one else. There is room here for good work that should be gotten at early, and in which the motor truck offers opportunity to more largely control the matter of transportation by making it a part of the plant's business. Other lines are doing great pioneer work of this kind which should point the way for the brick man.

The Division of Exploitation.

In the division of exploitation and selling, we come to a part of the business which the clayworking industry as a whole has been backward about, and now needs to come forward. Promoters of other structural material have shown commendable enterprise in this line, while the clayworking industry has made its big showing in educational and progressive work at the manufacturing end. There has been more development at the manufacturing end of the clay industry during the past twenty-five or thirty years than in the manufacture of any other structural materials. And now what we need, and urgently need more of, is progress in exploitation and selling on the part of the industry as whole. Some here and there have paved the way with splendid work individually in both advertising and selling, and some concerted efforts have been made that were fruitful of results. But there has not been been enough concerted effort, nor have enough put forth the full measure of individual effort locally.

Five Structural Material Offerings.

Just to get a better light on what is doing and what needs doing in the way of exploitation, let us turn for awhile to a consideration of the other structural material offerings with which clay comes in competition. Some time back there was gotten out in connection with the lumber industry a Forest Service report on the substitution of other materials for wood, which contained a number of things of interest to the clay working industry in this connection, because clay products constitute in some respects the most important item of building material which is replacing wood.

Under the head of general building and construction, we are first told that this is the largest consumer of lumber in the United States. It has accounted for the consumption of about 27 billion feet a year. This is divided into 13 billion feet used for planing mill products, sash, door and interior trim, while 14 billion feet is used in what is known as rough construction. When we compare this to 38 billion feet as an average yearly output of lumber we can easily see how important the building business is to the lumber industry. Also the clayworking industry can see some possibilities in the replacing of 14 billion feet of structural lumber with brick and clay products.

This review lists five principal building materials used in the United States as follows: lumber, concrete, steel, brick, and other clay products than brick. Also it says that the competition of these materials following rapidly-changing demands as well as rapidly-changing conceptions of their utility has undergone a remarkable change during the past few decades. Brick, one of the oldest construction materials, has always been a competitor of lumber, while concrete has been a material factor since 1900.

The Evolution of Building.

The claim is set forth that the present utility of these subjects varies greatly. In part they can be used interchangeably as in the siding of dwelling houses, where the builder, depending upon his taste, character of the structure, initial cost, etc., uses lumber, brick, concrete or tile. In the frame work of the modern skyscraper steel is the main item. Here the review does not enter into the fact that brick has had to meet substitutes because in the earlier days the big buildings were brick buildings, and some of the brick replaced in skyscrapers by steel construction has had to find a market in the home building field.

Referring to the agricultural regions, the review states that the general succession in building in the timbered regions is from the log house to the frame dwelling, and then to the more permanent form such as brick, stone or concrete. Naturally, therefore, when the settlement of a section of the country is well established the per capita consumption of lumber falls off rapidly. Illustrating this, it is pointed out that in New York and Pennsylvania, representing the older and fuller settled parts of the country, the per capita consumption of lumber now amounts to 206 and 292 feet of lumber, respectively, while in Montana, a state in which there is a large amount of new building in addition to a large consumption of mining timber, it reaches a per capita of 1,234 feet, and in Oregon 714 feet.

There we see the inevitable trend, a trend that can be speeded up by the efforts of the brick manufacturing industry. Just as the frame structure succeeds the log cabin so is it inevitable for the brick building to succeed the frame building, and as any section of the country settles down into real home life proposition there is a natural disposition to build for permanence and to build with brick. This, the students of the lumber industry have come to realize pretty thoroughly. In this review they not only point to this fact, but they also take up the subject of building codes in the cities, a subject that has been fairly well covered in these columns and needs no extensive review here.

Some Impressive Possibilities.

A chart showing the comparative values of the principal materials used in building operations is impressive of the possibilities ahead of the clayworking industry in the way of development. The lumber used for building operations has been more in the aggregate than all other building materials combined, and now that lumber consumption is on the decline there is an opportunity for the other building materials to increase, and the ratio of this increase for any one material will depend mainly upon two things—the adaptability of the material for the purpose, and the enterprise with which it is exploited. Since there is no question about the adaptability of the clay products for building operations, the whole future would seem to hinge on the activities in exploitation.

The Handwriting On the Wall.

The figures compiled by those gathering data for this review indicate that since 1907, or during the past ten years, lumber has been replaced with other building materials at the rate of approximately 5 billion feet a year. Lumber consumption in the United States reached its maximum in 1907, since which time it has fallen off approximately 15 per cent. During that period some lines of lumber consumption have increased, but the use of lumber in general building and construction work has fallen off from 32 billion to 27 billion feet, or about 5 billion feet.

Brick is cited as the only competing material whose consumption has fallen off. The percentage since 1907, it is said, may exceed that of lumber. The increase in cement consumption from 1907 to 1915 was 48 per cent. and the increased consumption of clay products during the same period was 20 per cent.

Here is the handwriting on the wall, so to speak, an object lesson of which the moral is plain and the way clear, and the big question it raises is, what are you going to do about it? There is plenty of evidence here of room to double and quadruple the business in clay products, and there is plenty of room to expand the use of clay products through exploitation in competition with other material to avoid all ruinous competition between the members of the clayworking industry. It is a situation calling loudly for exploitation and salesmanship. Let us to business, individually, collectively, and all pulling together for the common good and the big times ahead.

BRICK PORCHES.

One line in which brick has made conspicuous progress for several years now is in porch building, a field that was in the main captured from lumber by cement. The showing already made by brick in this work should encourage effort at promoting the use of more brick not only for the porch building itself, but also for foundation work to get a better order of harmony. This is a very promising field which has not been as intensively cultivated as it should.

Burning Clay Wares

by

Ellis Lovejoy

Written for The Clay-Worker.

THE CLAY-WORKER.

PART XXXII.

SINGLE OUTSIDE STACK KILNS.

THE center well type of outside stack kilns, Fig. 84 and Fig. 85, should be mentioned first because of its continued extensive use particularly in the sewer pipe industry.

The arrangement of the kiln may be the same as that of the center stack kiln, the difference being that the waste gases are drawn off from below instead of from above the well inlets. Since there is no inside stack to be considered, the well can be made much larger and the inlets correspondingly larger or in greater number.

The principle of the kiln is that the draft should be strongest in the center because of the greater distance from the furnaces.

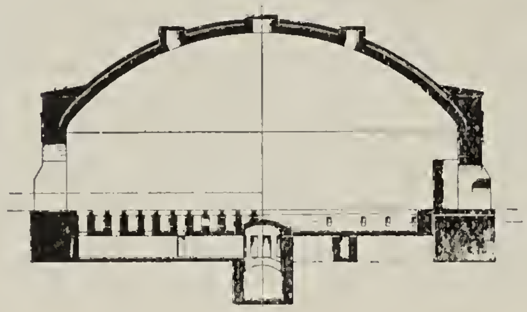


Figure 84.

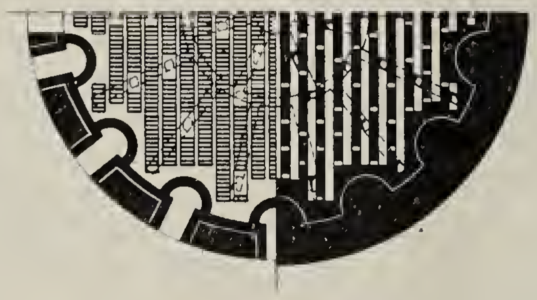


Figure 85.

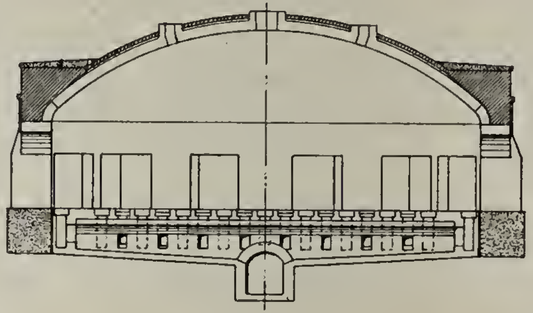


Figure 86.

It is remarkable what a difference of opinion there is in regard to the position of the inlets into the draft flues. The center stack and center well types have proven by their extensive use the value of strong central draft. On the other hand a kiln largely used in the west has the draft openings around the kiln wall. Here we have two extremes in successful operation, and from the results obtained it would be difficult to determine which type is the best.

The cross head flue type of bottom comes second, perhaps first, in view of its rapid development and the firm place it has in the clay industry. It has not displaced the center well type but it has encroached largely upon the particular field of the latter, and in other lines it by far has the preference. Its simplicity and efficiency appeal to the clayworker. This type is illustrated in Fig. 86 and Fig. 87.

As the name indicates, there is a main, arched draft or collecting flue across the kiln and from the center of this and usually at right angles to it, is the main draft flue to the stack or fan. On either side of and over the cross flue are collecting and perforated floor flues. The former enter the cross flue by openings in the side wall of the cross flue, and the latter connect with the former by openings in division walls. Various plans are worked out to overcome any lack of uniformity in the draft. In the plan shown the distribution over the kiln area is regulated by the position of the division wall openings connecting the collecting and perforated floor flues. The longest collecting flues, in the central axis of the kiln and controlling the largest floor area, enter the crosshead flue nearest the stack flue connection and in consequence have the strongest draft which seems essential since they must move the largest volume of gases. As the distance towards the ends of the cross flue increases, and the draft intensity presumably weakens, the area drained by the collecting flues lessens, and a practical balance is maintained.

Some builders claim that since the intensity of the draft is greatest in the center of the cross flue, the inlets from the central collecting flues should be of minimum size increasing toward the ends of the cross flue. Others hold that the inlets into the cross flue should correspond to the floor area drained which would make central connections large and the end connections small. Both plans are followed with good results. The kind of ware and setting has a great influence on the draft, and it is a good plan to make all the openings—both those into the cross flue and those in the division walls larger than the plan shows then close them with loose bricks to the proper size. Should the draft not be uniform, the sizes of the various openings can be easily changed by the placement or removal of the throat bricks. Thus the kiln can be adjusted to correspond to the conditions, and the adjustment is permanent.

Fully perforated floors preferably have the collecting flues below the floor flues which gives opportunity for graduated openings from the floor flues into the collecting flues. The western kiln, previously mentioned, is of this latter type except it does not have graduated openings distributed over the kiln area through the diaphragm between the floor and the collecting flues, but instead there is a single peripheral opening from each perforated floor flue into each underlying collecting flue. All the gases escaping through the floor must travel to the kiln wall, then down into the collecting flues and back to the cross flue. In other words, the draft is entirely in the outer ring of the kiln.

There are numerous modifications of the cross head flue type of kiln.

Fig. 88 shows a combination of a cross head flue with a ring collecting flue. The cross flue is divided into three parts, each controlled by a separate draft flue extended to the outside of the kiln, thence a single flue to the stack. The claim for this plan is individual control of the center and sides. The design is an effort to get the distribution of multiple stacks with a single outside stack.

Fig. 89 and Fig. 90 show a kiln presented by Greaves-Walker which may be classed as a cross head flue type with the difference that both the main flue and cross flue are connected with the collecting flue system. The features of the kiln are, the sloping collecting flues as in the kiln illustrated in Fig. 75, and the large main flue which may be entered from the outside to remove the accumulated sand without disturbing the kiln floor.

Comparison of this kiln with the two preceding kilns again brings out a marked difference in the draft. The kiln being considered has its strongest draft on a quarter point in the kiln circumference, decreasing in intensity toward the opposite quarter, and still further decreasing in intensity toward the ends of the cross flue, in consequence of the right turn. If such a kiln will give satisfactory results, and it is said to do so, why complicate a kiln bottom with multiple draft flues and minute adjustments as in the two preceding kilns? We believe that there are extremes in complications of bottoms to get theoretically uniform heat distribution, but barring such extremes, the kiln with the best distribution will give the better results, leaving, as it does, less to the skill and intelligence of the burner.

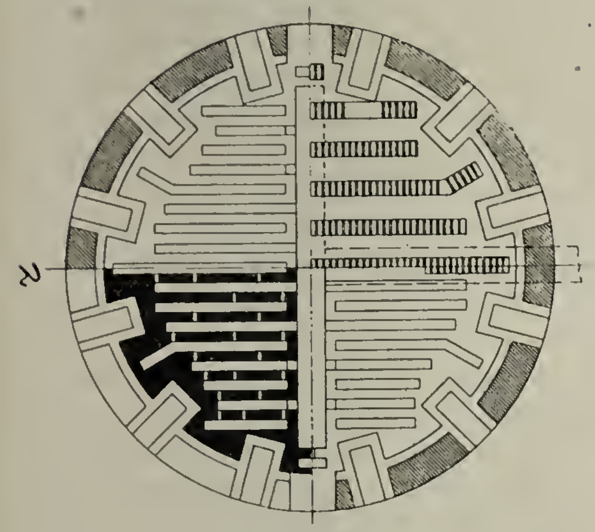


Figure 87.

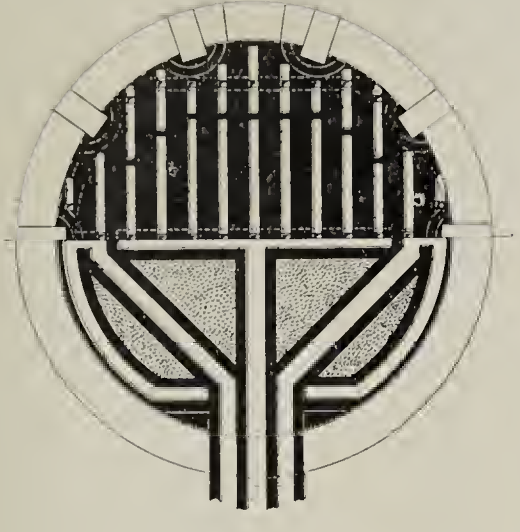


Figure 88.

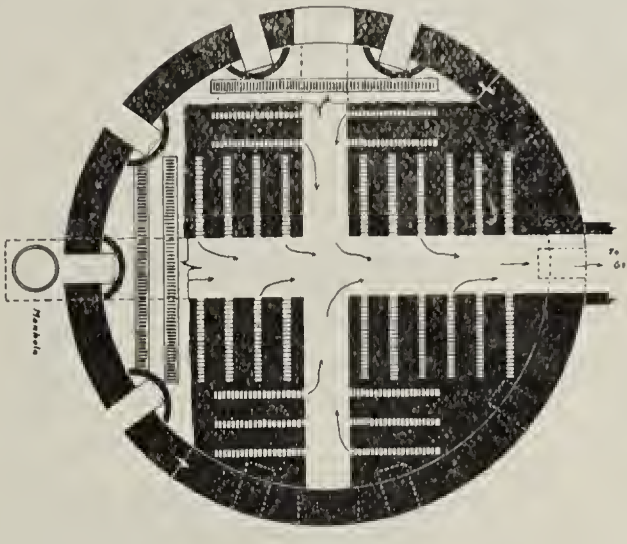


Figure 89.

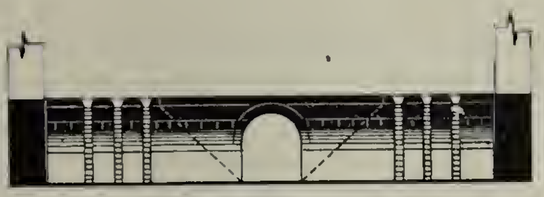
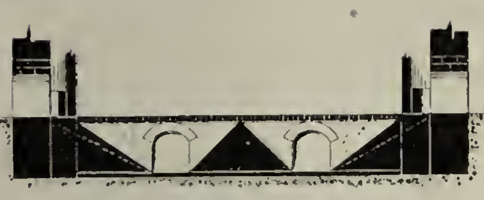


Figure 90.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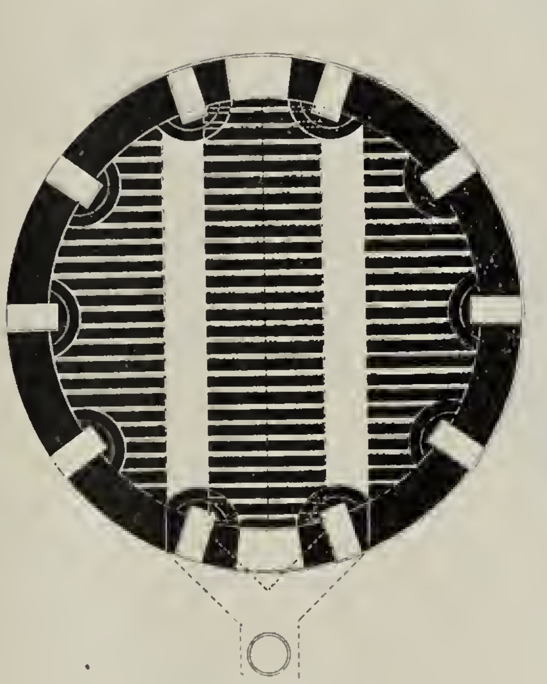


Figure 91.

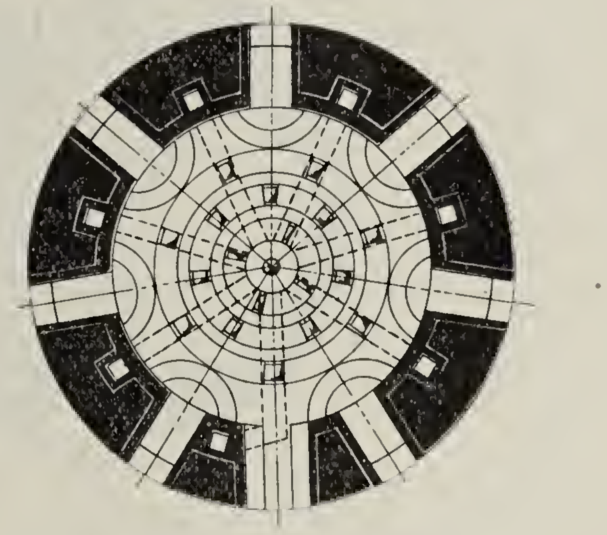


Figure 93.

A third modification of the cross flue developed on the Pacific coast, illustrated by Fig. 91 and Fig. 92, eliminates the blind draft flue which is also eliminated in the Greaves-Walker kiln, and instead of the direct and transverse flues, uses two direct flues. This plan has individual control of the halves of the kiln, combining the idea of individual control of the first mentioned modification, with the self-cleaning idea of the last mentoned kiln.

In this kiln we have the draft all from one side, but it would be better to have the draft connections on opposite sides of the kiln, thus giving, in a measure, a balanced draft. As it is the least kiln area on one side has a maximum draft and on the other side a minimum. Control on opposite sides would make both sides alike and while not theoretically perfect, yet considering the results obtained from the second modification, it, with the change suggested, would give practical uniformity.

We illustrated an up-draft potter's kiln in Figs. 66 and 67. The central stack kiln as shown in Figs. 77 and 78, or with other arrangement of under floor flue system, is considered by many the best type of kiln for pottery work.

The bottom of a simple down-draft potter's kiln with wall stacks is shown in Fig. 93. The under floor flues are circular with openings in the walls to form radial flues on the same level, leading to the wall stack flues, as in the Eudaly kiln. This kiln is practically a Eudaly kiln adapted to pottery work and the kiln properly belongs with the multiple wall stack kilns except that individual stacks are not built on the kiln wall, but instead, a large stack, the full diameter of the kiln at its base tapering to the requisite opening in the top, is used. Such a stack is shown in Fig. 66 and Fig. 94. The latter illustration together with Fig. 95, is from a kiln designed by C. B. Harrop. The plan, Fig. 95, shows three levels, one through the lower draft flues, one through the floor flues, and one above the floor level. The vertical view shows a section through a furnace and one through a draft flue. The waste gases circulating through the upper flue level are drawn to the center, then down and out to the wall flues through the lower level. The floor openings are graduated in size, being smallest near the center, to give uniform draft over the floor area. Prof. Harrop suggests that the floor system could be simplified without serious loss by taking the gases to the wall flues direct from the upper level thus eliminating the lower set of flues.

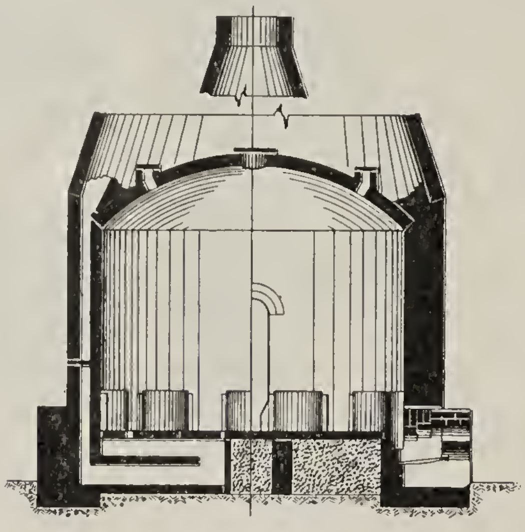


Figure 94.

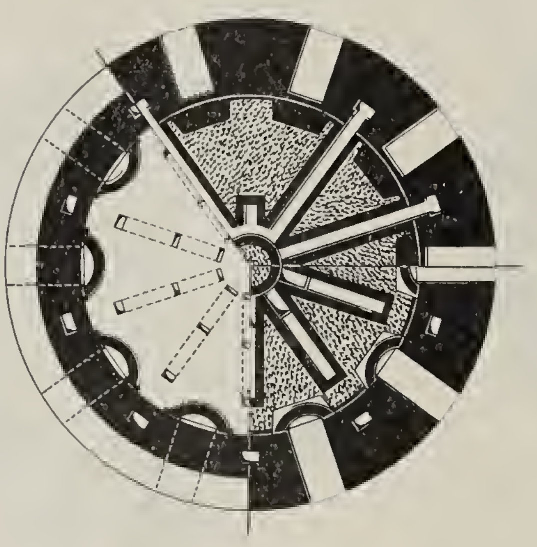


Figure 95.

The large stack typical of a "bottle" (pottery) kiln is not always necessary. For instance, in the up-draft kiln, Fig. 66, a small central stack above the crown of the kiln can be carried on I beams supported by the kiln walls.

(To be continued.)

In preparing the plant for the winter season, make it a point to protect pipes and valves against freezing because these things cost more now and are sometimes difficult to obtain promptly.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

THE SIGNING of the armistice on the 11th of November, while bringing great joy to the clay interests of the western coast as a harbinger of better conditions in the future, has made no immediate change in the amount of business for this particular line. All the manufacturers are simply waiting for the time when restrictions on buildings are fully released, and work may be started. The partial lift on building permits has done very little to alleviate conditions in the brick and clay world here in the west. In fact, the state of affairs in California and the rest of the Pacific Coast, is really more unsettled now than before the armistice was declared. Many government contracts that were helping to carry the manufacturers over the recent difficult times were cancelled, and the construction of large buildings where clay and accompanying products are used to any profitable extent is still held up with restrictions. All the western members of the trade, however, are optimistic in regard to future conditions, and are expecting a radical change along toward spring.

On account of the sudden cessation of war industries in Seattle, where they had reached almost the highest point on the Pacific Coast, building permits for the month of November have been cut in half, although there is still an increase shown over the permits of November of 1917. Portland makes a comparatively better showing, with an increase of over $200,000 for this month over October. Oakland permits decreased in rather less ratio than most of the other western cities, the shipping industry in that city undoubtedly keeping the amount of permits up to the standard set by war conditions. Factories on that side of San Francisco bay are being put up as fast as permits are granted, and the canning industry in California gives promise of additional plants being erected as soon as the government makes it possible. The Hawaiian field in that particular line has grown considerably broader in the last few months, and San Francisco firms are planning on business from that quarter. In Los Angeles, the permits have made up to a certain extent the decided drop shown for October. In that month the amount of permits was only $173,424, about one-sixth of the amount for the preceding month. November shows the building permits reaching over the $500,000 mark. San Diego also shows an increase, over double that of October, November being the highest month since March of this year. The San Francisco permits have been steadily dropping since last August, this month being less than 50 per cent. of the October report.

In Los Angeles an interesting discovery is reported to have been perfected from a clay aggregate, known as "floating brick," intended to take the place of concrete in the building of ships. Gustave Larson, general superintendent of the Los Angeles Pressed Brick Company, is the inventor, and he has the backing of several men well known in the trade along the Coast. Sylvester L. Weaver, director of the industrial bureau of the Chamber of Commerce, announced the contract between the government and the Los Angeles Pressed Brick Company, for the latter to furnish enough of the new brick to build three ships. Larsonite, the brick clay, is a floating substance, due to the fact that it is filled with cells which hold the gases in the process of construction. In Mr. Weaver's opinion, this is the greatest step in the shipbuilding industry since the change from wooden to steel ships.

Federal Fuel Administrator Albert E. Schwabacher, of San Francisco, removed 50 per cent. of the fuel restrictions on the amount used by the manufacturers of cement, terra cotta and all classes of bricks, tiles and stoneware, immediately after the first of December. Seven assistants were appointed by J. M. Wadsworth, engineer to the administration, to help carry out the program for fuel conservation during the winter.

N. Clark & Sons, of San Francisco, are hoping to have the proposed factory in Alameda, which is to replace the one destroyed by fire last year, in complete running order by spring. The plans for the plant are in readiness, awaiting permission from the government to start construction.

A terra cotta panel has just been completed by P. O. Tegnelli, chief modeler in the terra cotta department of the Gladding, McBean plant at Lincoln, California. This panel will be placed above the main entrance of the Bank of Santa Maria, in the town of that name. The work is in polychrome, and represents the flagship, Santa Maria, in which Christopher Columbus arrived in America in 1492. The detail of the work is said to be very fine.

After close competition, the plans of the San Francisco architects, Weeks & Day, were accepted for the State Capitol addition, estimated to cost $3,000,000.

The Pacific Building Materials Company have moved from the ground floor at 523 Market street, to offices in the Underwood building, in the same block. They are furnishing the material for several Honolulu building projects.

A. E. Snell, of the Remilliard Brick Company, reports the securing the brick contract for the addition to the warehouse of Dunham, Carrigan & Hayden Co., at Kansas and Alameda streets. The entire contract is for $700,000.

Gladding, McBean & Co., of San Francisco are furnishing the hollow ornamental tile for the Spreckles building at Pine and Davis streets in this city.

The following bids are asked on sewerage systems in various cities in the western territory: T. D. Kilkenny, city engineer of Vallejo, California, has been instructed to prepare plans for a sewer in Fifth street of that town. Municipal bonds have been put on the market for the purpose of raising $67,000 for improvements in the city of Modesto, California, $10,000, of that amount for sanitary sewer extension.

The town of Miami, Arizona, has contracted with the firm of Olmstead & Gillelen, of Los Angeles, to carry out the plans for the water and sewer systems in Miami. A complete sewer system is to be installed, and the entire cost of the operations will be between $300,000 and $400,000.

San Francisco, Dec. 4. SUNSET.

UNCLE SAM WILL TAKE CARE OF HIS BOYS.

The United States Government is resolved to do its best to restore every wounded American soldier and sailor to health, strength, and self-supporting activity.

Every Liberty Bond holder who holds his bond is keeping up a part of this great work of restoring to health, strength, and usefulness the men who have suffered for their country.

Until his discharge from the hospital all the medical and surgical treatment necessary to restore him to health is under the jurisdiction of the military or naval authorities, according to the branch of the service he is in. The vocational training, the re-education and rehabilitation necessary to restore him to self-supporting activity, is under the jurisdiction of the Federal Board for Vocational Education.

If he needs an artificial limb or mechanical appliance the government will supply it free, will keep it in repair, and renew it when necessary. If, after his discharge, he again needs medical treatment on account of his disability, the government will supply it free. While he is in the hospital and while in training afterwards the soldier or sailor will receive compensation as if in service and his family or dependents will receive their allotment.

A wounded soldier or sailor, although his disability does not prevent him from returning to employment without training, can take a course of vocational training free of cost and the compensation provided by the war-risk insurance act will be paid to him and the training will be free, but no allotment will be paid to his family.

THE HOLLOW BRICK INDUSTRY.

STATISTICALLY THE HOLLOW BLOCK or tile industry has been so mixed in with other clay products that it is not easy to separate it and show the growth and development annually by figures of production. Prior to 1906 though there was hollow block made, it was going mainly into floor construction, partitions and fireproofing around metal structural members of the interior of buildings, and it seems to have been listed in with architectural terra cotta. Beginning in 1906 there was a separating of this item of hollow block or fireproofing material from the architectural terra cotta, so that from then on we can follow the growth of the industry fairly well from the tabulated figures of production, which run as follows:

Production of Hollow Building Blocks:

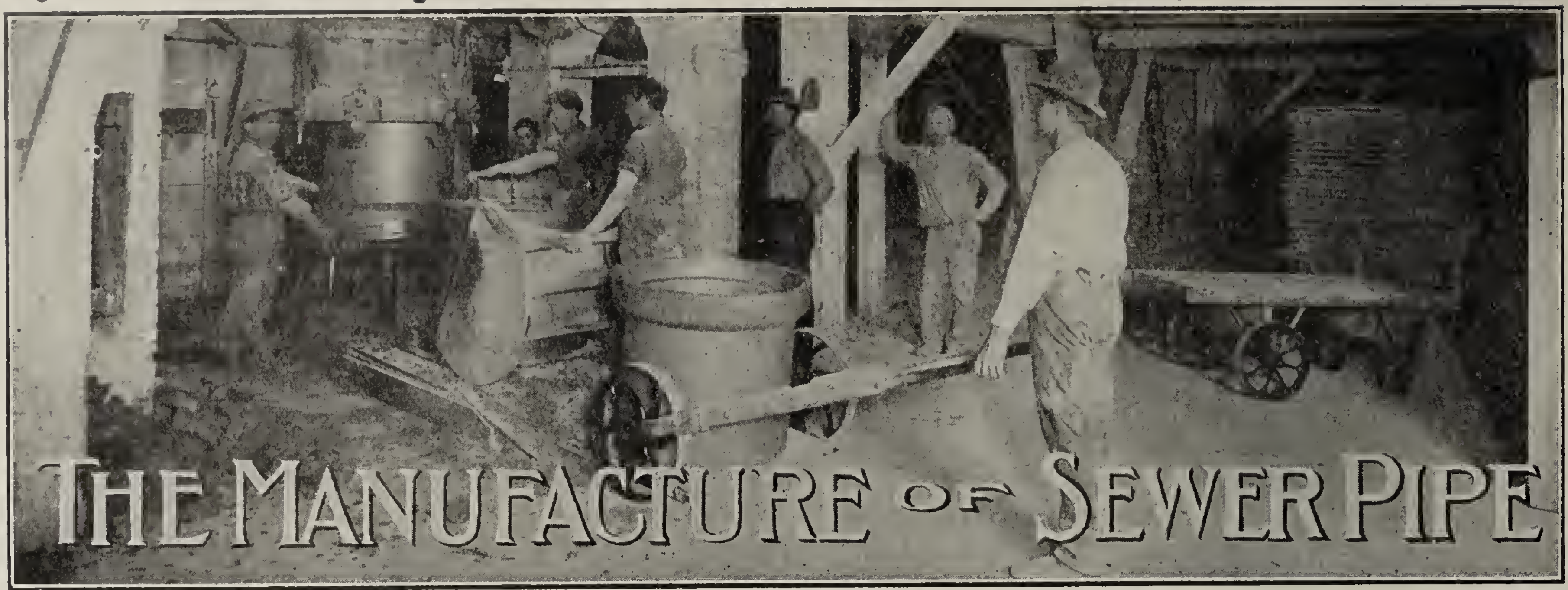
1906	$ 934,357
1907	4,250,618
1908	3,168,037
1909	4,466,708
1910	5,110,567
1911	5,660,172
1912	7,174,148
1913	8,620,216
1914	8,385,337
1915	7,800,938
1916	9,942,902

At this writing detailed figures are not available for 1917, nor for the present year, and if they were comparison would be difficult because of the market increase in value of all products. Broadly speaking, we may assume from these figures that the hollow tile industry had passed the ten million dollar mark annually when the war came to disrupt things. And it was not curtailed by war activities so much as brick, being in considerable demand for war structural work both direct and indirect, and it may safely be assumed that it will be among the clayworking industries that will show renewed activity now that we are going back to a peace basis. It has been making steady progress right along, and those engaged in this industry are actively pushing their product.

The U. S. Geological Survey report lists fireproofing, including hollow building tile or block, as being reported from 35 states, which will give some idea of how the industry has been spreading out and becoming general like brick making itself. However, the heavy production is in about three states. Ohio leads, producing something like 28 per cent. of the total. New Jersey comes second, and Iowa, third; these three states producing more than half the total for the entire country.

The growth of the hollow block idea in outer wall construction is the outstanding feature of the decade or more of progress, and this with the use of hollow cement blocks for the same purpose has served to center attention upon the subject of air spaces in outer walls. Out of this we have been developing a habit of making hollow walls even of brick, and of making hollow brick for wall construction. So in the future building we may not only expect to see hollow block playing a more important part, but we will have more brick walls with hollow spaces in them, and more making of hollow brick for wall construction.

The country-wide cry for better sanitation should make a big demand for sewer pipe and keep that industry humming.



THE MANUFACTURE OF SEWER PIPE

THE PRIVATE SEWERAGE QUESTION.*

By D. H. Wyatt, M. E.

FOR many months my time has been almost exclusively given over to the subject of private sewerage. It appeared to me at the outset that the weak spot in our mastery of the sewerage question lay somewhere between the public sewer, in which the municipal engineer is a specialist, and the house installation, which plumbing progress has carried to a high degree of perfection. But the sewerage and wastes entering through the plumbing system must find their way to the sewer and the zone between the foot of the plumbers sanitary stack and the street sewer has been, in many cases a sort of no man's land, sometimes coming under the supervision of the building contractor, sometimes the plumber and also, to a certain extent, the subject of public regulation.

D. H. Wyatt, M. E., Columbus, O.

It has been customary to divide the horizontal part of a private sanitary installation under two designations, although they are essentially one installation. But, yielding to custom in my choice of terms, I will refer to the portion of the sewer from the base of the stack to the foundation wall as the "building drain" and the part extending outside the foundation to the public sewer as the "building sewer." "House drain" and "house sewer" are equivalent terms in a sense to those which I will use, but restricted in their application to residences.

From a structural standpoint, private sewer installations are faulty in a large number of cases and these faults are a serious menace to sanitation. Few plights are so tragic, either in the case of a residence or a business building, as the stopping of sewage, with its accompaniment of flooded fixtures and foul odors, as the trouble is underground, the mere discovery of its location may mean tearing up a whole concrete cellar bottom or many yards of lawn or paving and the correction of the trouble is a laborious and nauseating task. I wish to make the point in this connection that less tolerance of mediocre installation is permissible in work which is buried in the ground than in structures which are in plain sight and easily repaired. In practice, on the contrary, it is quite customary for faulty underground jobs to be rushed through and covered up. The mere fact that it is out of sight salves the professional conscience of contractors who would not permit anything but the best workmanship.

Leaky building drains and building sewers produce certain typical results which may be enumerated.

1. Escape of Sewage. This is perhaps the least serious result, but it does produce foul cellar bottoms and sometimes moist areas in streets. It stimulates neighboring root growth and invites—

2. Intrusion of Roots. This is one of the most serious and the commonest menace to the proper working of a private sewer. Roots have been known to extend sixty feet from the tree to enter the pipe as mere tendrils and to swell until they fill the whole pipe. The crisis that they create can be imagined, if you have not had actual experience with it.

3. Intrusion of Ground Water. This tends to flood the system and interfere with the proper functioning of disposal plants. Where the carrying system is overburdened, it means the flooding of stoppage of the plumbing appliances and suspension of their usefulness.

4. Intrusion of Gases. Where gas pipes parallel the public or private sewer, the system often becomes surcharged with gas. It may force the seal of building traps and contaminate the air of a building. Explosions in sewers not infrequently blow up manholes and wreck the walls of sewers. Garage wastes often introduce gas into sewers. Leaky house drains allow the gas thus introduced to permeate the building.

When any of these things have gone wrong, the immediate S. O. S. of the building owner is addressed to the plumber. Hence the plumber has taken upon himself the solution of the question both as a matter of cure and prevention. His preventive measures have been the most natural in the world. He is primarily a metal worker and understands the joining of iron pipes. Where he has been consulted he has usually recommended a building drain of cast iron, as the remedy in which he has confidence. At his advice there has been a widespread legal propaganda, first for cast iron building drains, prescribed in many building codes; second, for cast iron building sewers, prevailing only in a few localities, and finally, for public sewers of cast iron, a step which is still in the conversational stage.

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*Read before the meeting of American Society for Municipal Improvements.

Anyone must be struck, at the start, with the enormously increased expense of substituting cast iron for the sewerage materials in more general use. Yet if cast iron is the only material capable of being tightly joined, the logic of the movement cannot stop short of complete cast iron sewer systems, for leaky sewerage is intolerable whether in the private sewer or the public sewer.

My researches have convinced me that there is no sound argument for the use of cast iron sewerage and many reasons against it.

Take a temporarily pressing reason, the need for metal to win the war is so pressing as to make it questionable patriotism for anyone to use a pound of iron or steel underground. Cast iron used for pipe, diverts pig iron from the manufacture of steel. The government's need for steel in the current six months amounts to 200,000,000 tons, where the greatest production record for any preceding six months in the history of the industry has been 160,000,000 tons, both for public and private use. Every five feet of 18 inch iron pipe buried in the ground deprives the government of sufficient metal to build a 430 h. p. Liberty motor or enough to build any standard truck engine in the 30 to 40 h. p. class. Every 2 foot length of cast iron pipe represents enough material to make a Ford power unit complete, which might be rendering Red Cross duty on the fields of France.

To reason apart from temporary war conditions, everyone knows that iron is one of the metals most subject to chemical attack. It rusts readily and the introduction of acids into the sewage, such as is increasingly experienced through varied lines of manufacture, means the destruction of heavy pipe in a few weeks or months. Electrolysis is also a scourge that must be taken into serious account.

Vitrified pipe, on the other hand, which has been the standard sewerage material for moderate diameters of sewer for half a century, is well constituted to withstand chemical attack, consisting largely of alumina and silica, both highly inert compounds. Examinations of faulty vitrified building sewers reveals the fact that, almost without exception, the joint is the cause of trouble.

My associate and I saw no reason, therefore, to accept the iron pipe as the solution of the private sewer question until we had exhausted the possibility of producing an impervious joint in vitrified pipe. If we succeeded only in making it a temporarily acceptable war substitute, we would be performing a patriotic service. But our solution was good enough, we confidently believe, to establish vitrified pipe as the preferred material, not the substitute.

The remedy proved extremely simple, once we were on the right track. It consists, essentially, in pouring the joint in liquid form, rather than applying it with a trowel at a stiffer consistency.

Most troweled joints are made so badly that the workmanship would not pass muster anywhere that the results were exposed to view. Some workers, on the other hand, conscientiously and carefully fill the pipe bell with mortar, in making hand formed joints. In this case it was a good joint and remained good for perhaps three minutes. At the end of that period the workman would progress to the point of making another joint. He would manipulate the end of one of the pipes just joined. The new-made joint would be disturbed, causing the mortar to crack away from the surface of the pipe. Thus the day's work was a pathetic sequence of making good joints and immediately spoiling them.

The pouring process, with the aid of the mechanism which we devised, cuts the human element to the minimum. The pipes are brought together and lightly caulked to prevent the intrusion of joint material in the pipe. The joint mold is applied and clamped tightly about the joined bell and spigot. The molds are sufficient in number for the entire job, or at least a day's work. When all are in position, the whole job is poured with a thin mixture of Portland cement grout, similar to that used in filling brick or stone pavements. There is an alternative practice of pouring the joint with a good bituminous compound heated to liquefaction. The mold works equally well with either joint material. It has the advantage over the old fashioned asbestos runner in that it provides space for a distinct bevel of joint material and the heat of liquefaction is retained until penetration is complete, a result in the narrow annual space of the pipe bell, between two cold surfaces of pipe. The bituminous joint provides a degree of elasticity and is a safeguard against perpendicular breaking strains and it is also to be preferred where the need of prompt backfilling forbids waiting for the setting of a grout joint.

The form itself is of overlapping sheet metal scales or plates, strung on two small steel cables and provided with clamps for joining and a funnel for pouring.

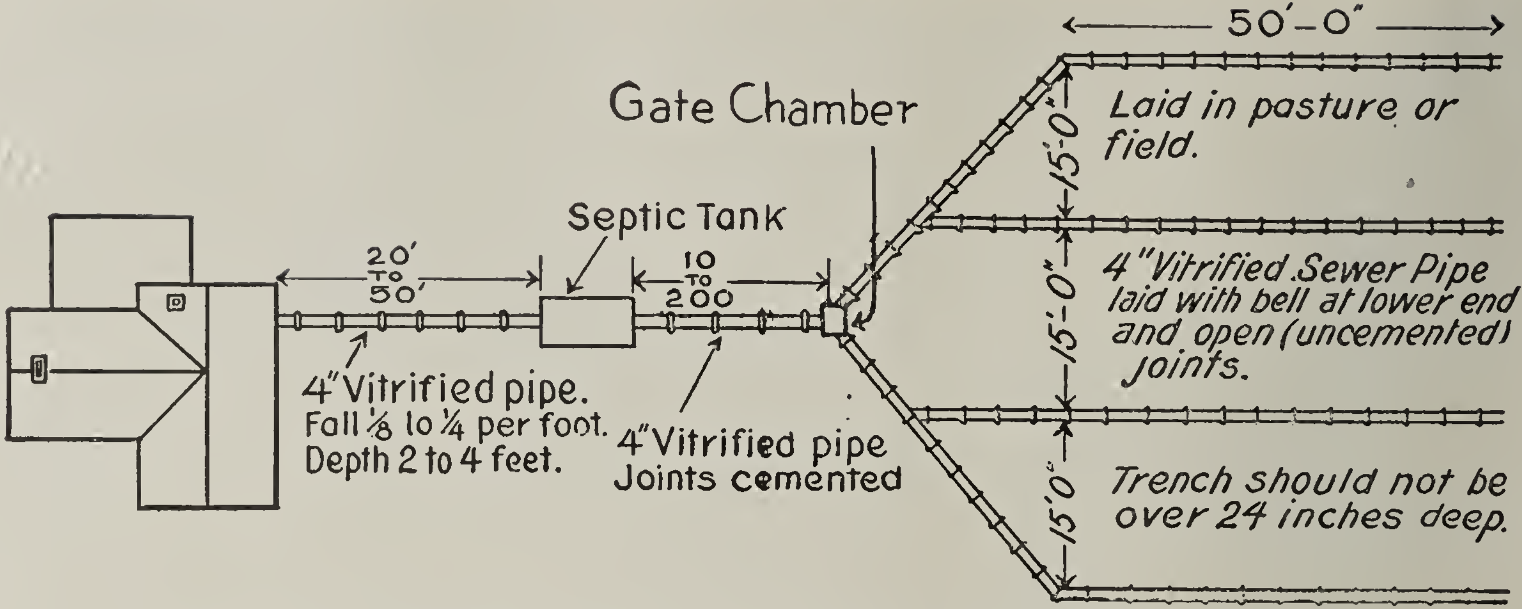
The importance of vitrified pipe installations that are thoroughly impervious cannot be overestimated. I have dealt only with the private sewer, but every advantage accruing to my solution of the private sewer question applies with equal force to the public sewer. Many other fields of usefulness. such as irrigation and certain phases of oil transportation.

At the same time, the private sewer is well worth the emphasis I have given it. Engineers have frequently underestimated the harm that comes to public sewers through faulty pivate laterals. It was stated on prominent authority in the Am. Soc. of Civil Engineers that the measure for the infiltration of ground water should be the standard of square inches of exposed joint. An estimate of infiltration in a typical sewer installation on a residence street showed that in every hundred feet of public sewer there was three times as much infiltration from the private laterals as from the joints of the public sewer itself. The case presumed was that of an 8 inch sewer, laid in 3 foot lengths with a lateral every 25 feet right and left. The laterals are of 4 inch pipe in 2 foot lengths and extend an average of 80 feet into the abutting private property. Another point to be considered in regard to infiltration is the protection that the public sewer receives from waterproof pavements, while the private sewer is not thus protected.

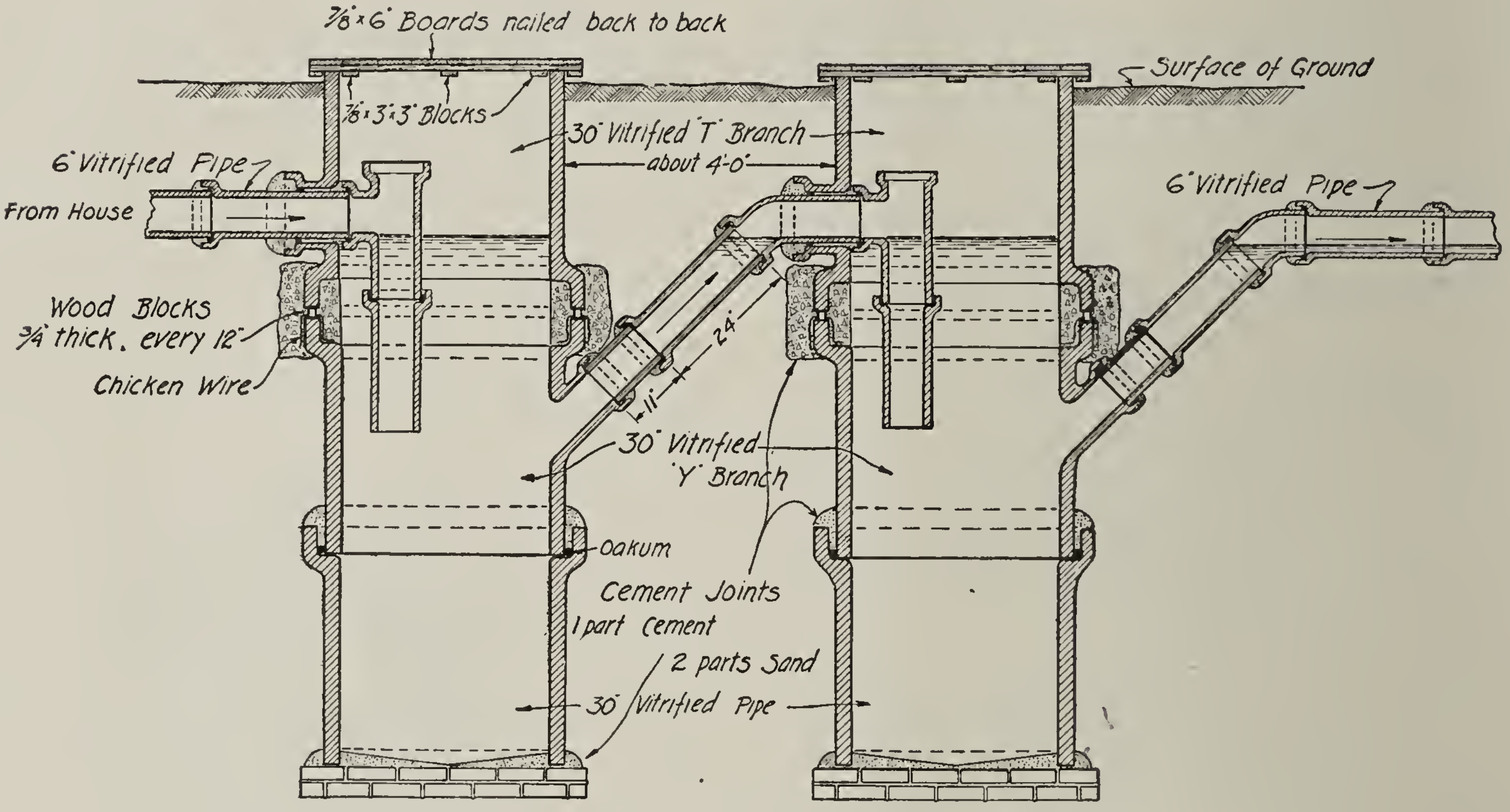
When we survey the failures, mistakes and evils of private sewer construction, we need not be surprised that things are as they are. The problem of tight sewage, whether public or private, is an engineering problem. Yet boards of health who draft codes for private sewering are composed, not infrequently, of plumbers and physicians. There ought to be at least one good engineer on every board of health. The city engineer is the logical man, since through his presence there, the essential unity of the whole sewer system, public and private, could be maintained and conditions enforced in private sewerage most in harmony with the needs of the public sewer system.

SANITARY CONVENIENCES AND COMFORTS FOR COUNTRY HOMES.

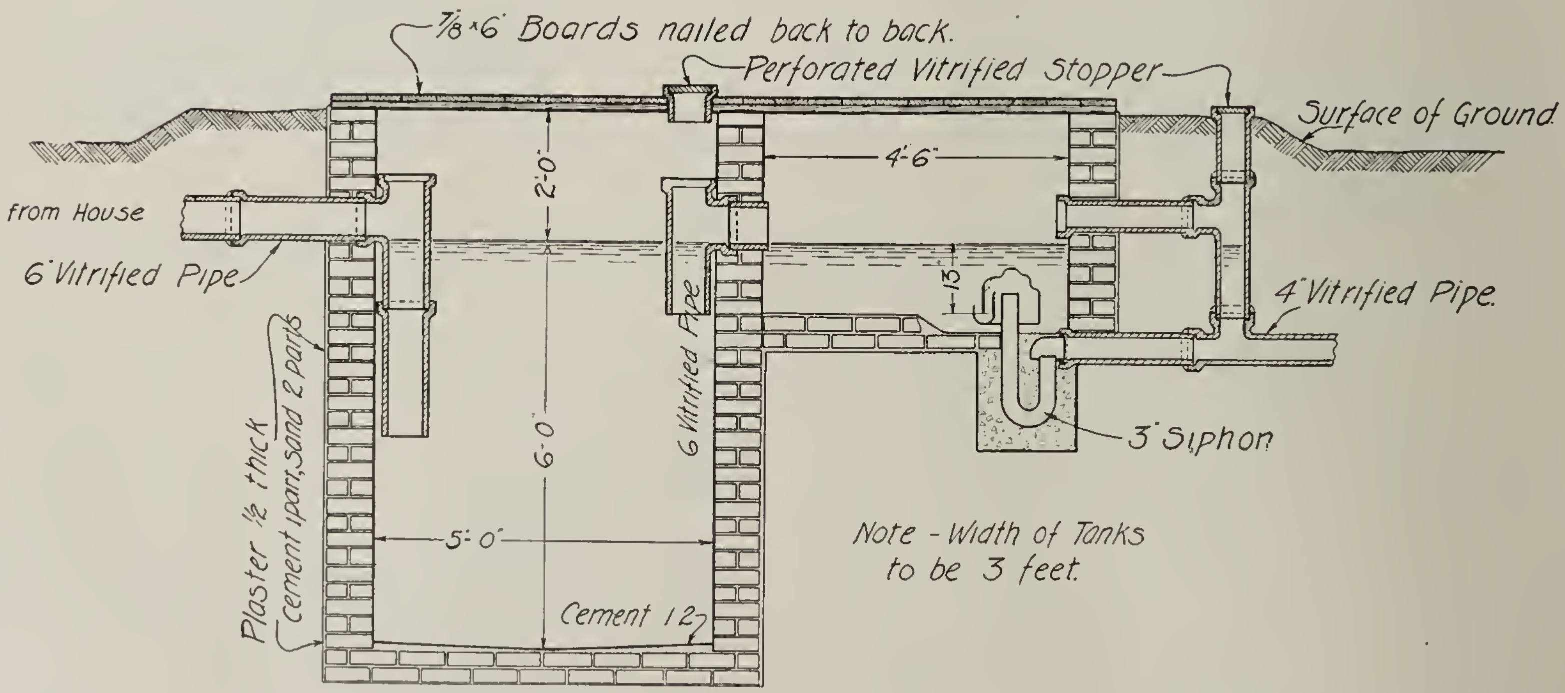
THE FARMER OF TODAY is the peer of his fellow man regardless of profession or vocation. College bred and city-broke he requires the same surroundings and comforts in his home life that city folks are accustomed to. He wants sanitary conveniences in and about his home and these can be obtained in most instances from neighborhood pipe and tile plants. In an interesting leaflet entitled "City Comforts for Farm Homes," the Sewer Pipe Manufacturers' Association with headquarters at Akron, Ohio, gives instructive details as to the manner in which ordinary sewer pipe and drain tile may be used successfully in supplying the desired sanitary equipment. As a preliminary, it states that people who like


50'-0"
Gate Chamber
Laid in pasture or field.
Septic Tank
20' to 50'
10 to 200
15'-0"
4" Vitrified Sewer Pipe laid with bell at lower end and open (uncemented) joints.
15'-0"
4" Vitrified pipe. Fall ⅛ to ¼ per foot. Depth 2 to 4 feet.
4" Vitrified pipe Joints cemented
15'-0"
Trench should not be over 24 inches deep.

A Septic Tank of Vitrified Pipe is Simple to Construct and Gives Everlasting Service.



The Disposal Field May Have the Pattern of a Fork.


⅞×6" Boards nailed back to back.
Perforated Vitrified Stopper
Surface of Ground
4'-6"
2'-0"
from House
6" Vitrified Pipe
13"
4" Vitrified Pipe.
6" Vitrified Pipe
3" Siphon
6'-0"
Plaster ½" thick Cement 1 part, Sand 2 parts
5'-0"
Note - Width of Tanks to be 3 feet.
Cement 1:2

The Double Chamber Septic Tank Insures Discharge to All Parts of the Disposal Field.

country life the most usually appreciate certain household conveniences which city people can enjoy for the reason that city people have sewers.

It saves work to have kitchen, bath, laundry and dairy piped for water and equipped with drains. One who has enjoyed these conveniences for a few days would not be without them for a fortune.

Old fashioned outside closets have been a bugbear to their users and have largely offset the healthful features of rural life. They often contaminate wells. They are uncomfortable in cold weather, cause colds, catarrh and pneumonia. When visits are postponed, through dread of cold serious internal disorders develop.

Farm houses can have sewers, modern plumbing and city comforts at moderate cost. But where the city man's sewer is built past his door, without requiring any thought on his part, the country dweller must plan his own system with view to existing conditions.

The wide distribution of Vitrified Clay Pipe and the ease with which it is installed makes the task economical and well within the ingenuity of the average farmer to accomplish.

Features to be Considered.

The problems to be met in installing modern plumbing appliances in country homes are:

1. Sufficient water.
2. A method of maintaining water pressure.
3. Plumbing appliances and piping.
4. A house drain and sewer of Vitrified Clay Pipe, leading from the base of the stack to the disposal system.

A copy of this interestting leaflet can be had for the asking. It is illustrated cleverly and through the courtesy of Mr. Henry P. Boynton, the S. P. M. A. Publicist. We reproduce the sketches and suggest that our readers who are interested get full particulars as to the best methods of using vitrified pipe on the home and farm.

PRACTICAL SUGGESTIONS ABOUT DRAINAGE.

In the beginning the work of drainage the amount of land or area that naturally drains to certain points where it is expected to make outlets should be pretty accurately determined. The inclination or fall should be ascertained, and if at all convenient marked on grade stakes. The whole should be platted and carefully preserved for future reference.

The size of the tile necessary for each portion of the work may be quite correctly determined by taking into consideration the area to be drained through the pipe, and the fall giving to the water a greater or less rapidity of flow. Tile used in the main drains should be large enough to receive the entire flow of water from the area to be drained, in a reasonable length of time, to receive all necessary lateral drains in the future progress of the work. Let the work in the beginning be so well done as to look forward to its full completion.

A tile drain should have a sufficient outlet for the free discharge of all the water that may pass through it.

All drains should be deep enough to be out of the reach of the perceptible chilling effect of evaporation, and also to drain the widest space—from three to four feet— and deeper if necessary to get the water out by a much shorter drain; but drain by all means, even if you cannot get an outlet to drain so deep.

The bottom of a drain should be one regular line of descent, so that the current may have a smooth flow from the head to the mouth of the drain.

In the laying of tile take pains to fit the joints closely, for with all care there will be sufficient space for the inlet of water, and close joints will prevent the letting in of silt or washings.

Every tile used in a drain should be perfect in form and well burned, so much so as to have a clear metallic ring.

In digging a ditch commence at the outlet and stretch a line the distance of several rods on one side of the intended drain. Then with a common spade remove two spade depths only as wide as is absolutely necessary for the size of tile to be used and convenience in working, for every inch saved in the width of the drain is a large per cent of the amount of dirt to be handled in excavating and filling the drain. After removing two spades in depth and shoveling out the loose dirt with a long-handled shovel, a long ditching spade should be used, one depth of which will make the ditch three feet or more in depth, if two full lengths of spade have been removed, or one depth of common spade and two depths of ditching spade will make the drain three and a half feet deep, or more, if the longer ditching spades are used. A plow and two horses can be used to good advantage in turning out the first foot in depth of the drain.

In the laying of tile commence at the outlet, and in the third joint of tile from the mouth fit in a tile gate it can be had conveniently. Fit the joints closely, and be careful to avoid shouldering the tile. On each side of the tile fill in clay or sod, or if the bottom has much fine sand or silt, flax or common straw may be used to advantage at the joints. Use care to settle the tile so that they will not likely be moved in filling the ditch, which may be done with a plow or scraper.

In the construction of a drain, at the point where the work ceases for a time, take the precaution to secure and note the same, so that the work may be readily resumed at any time.

At the junction of drains the water should be brought to flow as nearly as possible in the same direction, that the current may not be obstructed.

If drains be laid at a distance of 40 feet apart, 64 rods of tile will be required to lay one acre; if at a distance of 50 feet apart, 52 rods and a fraction will be required; if at 60 feet apart, 44 rods will be required to the acre.

THE NIGGER IN THE ALLEY.

A city salesman of the Liberty Bond Army out selling the fourth issue of Liberty Bonds, had been given what looked like pretty hard territory, his district for the day being made up mainly of colored people living in alleys and along back streets. At the noon gathering of the clans to tally results this salesman was one of the happiest men there, and had made a good showing. He told of spending the morning among the niggers in an alley where he had booked every one for a fifty-dollar bond to be paid for at the rate of a dollar a week at a local bank. The orders included women washing for their money, and the wives of colored laborers out at work, and were characteristic of good work done among not only the colored people but also with the poorer white people in the same city. And the whole thing is significant of the fact that the war has taught thrift, even down to the nigger in the alley. And that thrift means better and bigger times in this country in the future. Those bonds mark the beginning of a savings habit that will eventually reflect itself in better homes, better furniture and better living all around.

One of the things we are learning about farming is that proper drainage, and deep fall plowing make in general a better proposition than irrigation, for then the ground stores water for crop growing and yields it up as needed during the summer. Tile drainage and sub-soil plowing are the important factors in better farm production.

REFRACTORIES

Classification of Refractories.

MATERIALS SUITABLE for exposure to the action of heat and having the property of resisting high and changing temperatures may be classed as refractories. They must also be able to resist exposure to the action of atmosphere as well as molten fluxes at high temperatures and under pressure without suffering sudden chemical or physical changes. It is evident that no refractory would be able to meet all these requirements particularly on account of the wide variation in chemical composition of molten fluxes. Naturally then refractories of different qualities must be used to give the best results under the conditions to which they are subjected. Another essential of considerable importance after consideration of the chemical composition of the molten fluxes which will come in contact with the refractories, is the temperature at which this exposure will take place, how widely and how rapidly the temperature will vary and how much abrasive action and what pressure will be exerted.

Any refractory must have stability at the temperature to which it is exposed, with sufficient reserve of stability to resist chemical and mechanical influences externally applied. The first quality is a question of pure refractoriness, the second is one of refractoriness plus skill in application.

A division of refractories into classes will then be made primarily according to refractoriness and secondarily according to the behavior of the material toward acid or basic compounds brought into contact with it.

Reactions producing acid slags demand refractories of an acid character and basic slags basic. There are also some neutral refractories which are often used in both cases. Where the chemical action of the slag is very strong neutral materials are sometimes used to replace basic materials. Purely acid or purely basic conditions seldom exist so that a compromise is usually applied and increased refractoriness considered before other influences.

Acid refractories are always used where resistance to heat is required as they are widely distributed and usually low in cost. On the other hand proper basic and neutral materials are not so widely distributed and are apt to possess properties which make them difficult of application. Where the chemical action on the refractories is very strong neutral materials are sometimes used to replace basic materials.

According to Havard[1] "the chemical constituents of a slag and of a heated furnace material are always endeavoring to form slags of a neutral character. Thus a basic slag containing one or two bases, such as lime and ferrous oxide of the composition $ROSiO_2$, would make an effort to form a singulosilicate of the composition $2ROSiO_2$ and would demand an acid lining since otherwise it might extract some of the base from a basic lining. Vice versa, a slag that was already basic say $4ROSiO_2$, would extract some silica from a silica lining to form $2ROSiO_2$, a more neutral slag. To avoid such contingency a neutral or basic lining should be used. The fire clays have been especially useful in making fire brick linings since they approach the character of neutral salts, namely, silicates of alumina; although it is true that, under certain conditions and with certain metallic oxides, the alumina and silica both act as acids and are easily corroded by certain basic slags, such as, for instance, the oxides of lead, bismuth and antimony.".

The natural division of refractories is, then, acid, basic and neutral.

Acid Refractories.

This class of material depends upon the high melting point of pure silica for its refractoriness. It would depend, then, to a large extent upon its freeness from metal oxides and alkalies. Materials in this class are quartz, quartzites, sandstones, etc. Quartz glass is one of the purest acid products and has the remarkable quality of resistance to sudden changes of temperature. This product is used chiefly in chemical operations.

Silica brick, although not so pure a product, is used on a much larger scale. This product is made from amorphous silica as gannister chirt, etc. This should contain from 95 to 98 per cent. of SiO_2 and fuses at a temperature equivalent to the fusing point of cone 32. Such rock is widely distributed and exists in many varieties. More varieties are now being used than was prevously thought possible. Most of the material that is used is ground up, mixed with water and tamped into moulds. The addition of about 2 per cent. of lime hydrate is usually made as it sets and produces an article that can be handled in the green state.

As a rule the quality of a silica brick depends more on the physical and mechanical properties of the rock than on the chemical composition. These silicious materials expand on heating, some of them so much that they are not satisfactory for use.

According to Ross[1], "The specific gravity of quartz is 2.65, that of cristobalite is 2.33, and that of tridymite, 2.11. Upon heating alpha-quartz (the stable form at atmospheric temperatures) is inverted to beta-quartz at 575 degrees C. In the presence of a flux, this beta-quartz is transformed into beta-tridymite at 870 degrees C. This, in turn, is transformed at 1470 degrees C. into beta-cristobalite (which is the stable form from this temperature to its melting point, 1715 degrees C.). "In the absence of a flux, the beta-quartz is transformed directly to cristobalite (which in this case is the final form.)"[2] In the manufacture of silica brick 2 per cent. of lime (CaO) is mixed with the quartzite. Upon heating, the lime combines with a small amount of the silica to form a glass, or, in some cases, possibly a little mono-calcium silicate (CaO, SiO_2). The quartz of a silica brick is transformed first to cristobalite, but as the lime constitutes a small amount of flux, continued heating causes the silica to be slowly converted into tridymite, after approximately two-thirds of it has been transformed into cristobalite."

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[1] Refractories and Furnaces.

[1] Silica Refractories, Transactions of the American Ceramic Society, Vol. I, No. 7, page 477.

Large quantities of silica are used in the form of sand for forming the hearths of open hearth furnaces and in the iron and steel foundries.

Refractory Clays.

These might also be classed as acid as they may be used for processes only in which acid or neutral effects are produced. However, on account of their wide variety and application they are entitled to a classification by themselves. The most refractory clays correspond to the formula Al_2O_3, $2SiO_2$, $2H_2O$. Clays of this type fuse at a temperature equal to the fusing point of cone 35 to 36. Any increase in the ratio of silica to alumina reduces the refractoriness. When the silica has increased to a point where the composition is 87 SiO_2, 13 Al_2O_3 the mixture fuses at 1610 degrees C. or approximately cone 27. This is the eutectic point or most fusible mixture. At this temperature the silica and alumina have formed sillimanite and cristobalite. However, as the refractoriness decreases, due to the increase of silica, a very valuable property is developed that in many cases warrants the decrease in refractories. This is the ability of the material to resist pressure at increased temperatures. The increase in silica makes a more fusible mixture, but the temperature ranges from first softening to final fusion occurs in a narrow margin. Much narrower than it is with the more refractory proportions. There are many grades of fire brick on the market that fuse at cone 32 and yet do not resist loads at 1350°C., as well as more silicious brick which melt at cone 28. Clays of the refractory type are rather scarce. Kaolins and china clays are of this type. Their use as refractories is not as wide as it should be. However, considerable experimental work is being done along this line. There are some clays that have remarkable properties such as not only being very refractory but also making tight bodies at lower temperature. Clays of this character are in demand for glass pots, crucibles slag-resisting brick, etc., particularly when they have high bonding strength. It is interesting to note at this time that there are many No. 2 fire brick that are much better for resisting the action of molten slag than extremely high grade but porous brick. The reason for this is that the poorer quality brick are denser and so do not permit the slag to penetrate while the slag can run into the better grade porous bricks and corrode them. Where the temperature of the furnace was too great, however, the No. 2 brick would fail.

Basic Refractories.

The chief of these are magnesite, dolomite and alumina. Lime marl and bone ash are also included but are not so important. The chief forms of alumina are calcined bauxite and alundum.

Magnesite is one of the most useful of the basic materials. It is used not only in the form of brick and special shapes but also as a rammed mass for furnace bottoms. Magnesite is not only highly refractory but it is also an excellent conductor of heat. Unfortunately it has a tremendous shrinkage which makes it necessary to use great care in dead-burning the material before making it into brick and also burning the brick themselves to extreme temperatures. Fluxes, as iron oxide, are also added to assist in making a hard product. Some of the Austrian and Grecian deposits are particularly adaptable to use for the manufacture of brick as they already contain from 2 to 8 per cent. of iron oxide.

Dolomite. This material is prepared for refractory purposes by calcining dolomite (magnesian limestone) to very high temperatures, not only to drive off the CO_2, but also to shrink and solidify it as much as possible. The refractoriness of dolomite is affected by the content of silica and iron and the ratio of these two to each other.

Dolomite is not as stable as magnesite and should be used as soon after calcining as possible as it hydrates. It is particularly refractory in contact with basic slags and metallic oxides. It is only recently that any degree of success has been met with in the manufacture of dolomite brick, and now only on a very small scale. If dolomite brick can be manufactured with anywhere near the durable qualities of magnesite brick it will be very gratifying on account of the difference in cost of the two raw materials.

Alumina. This refractory, on account of its high cost can only be used in a limited way or where the value of the product is considerable. It can be mixed with plastic clays in any proportions, the refractoriness of the mixture increasing with the increase in alumina. When one equivalent of alumina is added to one equivalent of clay, intimately mixed and calcined to a high temperature, there is a definite mineral formed known as sillimanite.

Sillimanite is very refractory, fusing at 1816°C+10°, and is quite stable. To form any quantity of sillimanite from alumina and clay it should be calcined to cone 18 and held at this temperature a long time. Some will form as low as cone 12 to 14 but very little unless the heat is maintained for a long time. The more times the mixture is burned the more sillimanite will be formed so that brick made from it would become better in use. Sillimanite bricks would be very satisfactory where there was considerable temperature change as it is not subject to conversion like a silica brick.

Spinel or Magnesium Aluminate. Of all the lime alumina and magnesia mixtures the most stable compound in contact with the melt is magnesium aluminate (MgO,Al_2O_3, i. e. MgO 28.4%, Al_2O_3—71.6%. Rankin and Merwin show its fusion temperature to be 2135°C+200°. The fusion temperatures of both alpha and beta alumina is 205°C, and the eutectic mixtures with the MgO,Al_2O_3 are both 1925°C.

Tubes and crucibles of spinel have been supplied for some time by the Royal Porcelain Manufactory, Berlin. Boats made of this material are more constant in weight than platinum boats. A brick made of spinel would be of value in special cases and is well worth experimenting with. Some copper slags are very corrosive and brick made of spinel should prove very good for use on the slag line of some copper refining furnaces. It is essential that brick for this purpose be burned dense enough to prevent the penetration of the molten slag into them. It is quite probable that some flux would have to be added to the mixture as is done in making magnesite brick.

Nuetral Refractories.

This group includes mineral salts such as chromite, steatite, zirconia, carbon, artificial carbonaceous materials as charcoal, coke, graphite, etc. Also metals like iron, platinum and nickel. Not all the above would be classed as extremely refractory but are named in view of their chemical properties.

Chromite is the most widely used both in ground and brick form. Bricks are difficult to make on account of their lack of bond before being burned to high temperatures. Chrome can be used very well as a mortar in contact with dolomite.

Carborundum is very satisfactory as a refractory and carborundum bricks are very good, but unfortunately their cost is prohibitive excepting in exceptional cases.

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[2] Am. J. Sci. 36, 339 (1913) C. N. Fenner.

STRUCTURAL ORNAMENTATION.

A Study in Face Brick, Fancy Brick, Architectural Terra Cotta and Decorative Tile as Factors in the Clayworking Industry and in the Structural Material World.

WITH the general turning once again to peace construction and the upbuilding of the country we will soon have before us as an important subject for consideration the question of structural ornamentation, of obtaining pleasing effects and variety especially in permanent building material. So it is plainly in order to take stock of what we have and what is doing in the clay working industry to supply the probable demand for ornamentation of brick and similar structures. And first, it is but just and fair to say that common brick always has been and always will be a feature in architectural beauty and structural ornamentation. The present discourse, however, is to be about other clay products than common brick.

Some Confusion of Names.

There are five items in the statistical compilation of the U. S. Geological Survey on clay products which we can put in the ornamental class. They are Front brick (generally classed in the trade now as Face brick); Fancy or ornamental brick, Enameled brick, Architectural Terra Cotta, and Tile other than drain. And there is an interesting question of terminology here which might well be given attention by the trade. The names are in the present day a bit mixed and confusing. The old term of fancy or ornamental brick is rapidly being absorbed in that of face brick except where it involves special features like that of enameling. It is the term "tile" that is the most confusing to the lay mind, however. We have drain tile, roofing tile, ornamental tile, and hollow tile or block. There is a growing disposition to class the latter as hollow block and leave out the tile part, but there still remains several products to which the term tile is applied, and for the sake of clearness and better understanding on the part of the public it would not be a bad idea to have a renaming of these products.

Five Ornamental Items in Clay.

The most important in this group of five items in point of annual production and total value is front or face brick. This makes up nearly half the total of the five ornamental items, or did in the year 1916, which was the maximum period in production. The total value of each of these items as shown by the U. S. Geological Survey figures for 1916, was as follows:

—The 1916 Production—

Front Brick	$11,464,614
Fancy or Ornamental Brick	109,072
Enameled Brick	827,443
Architectural Terra Cotta	6,466,336
Tile (not drain)	6,475,464
Total	$25,342,929

It will be readily noticed that the total is one of some magnitude, being in round numbers about half that of the total value of common brick, the leading item in the clayworking industry, and nearly up to the total of firebrick, while it is just about twice the total of paving brick. So these five items which go into structural ornamentation have become real factors as well as growing items in the clayworking industry, and increased interest attaches to them from the fact that they are likely to grow into still larger prominence within the next few years.

The Growth of Face Brick.

Face or front brick attained its maximum production and value in 1916, but now that we are back to our building program again we may expect some new records. This product has almost doubled in value in the ten-year period. Back in 1908 the total was $6,935,600. There were some years prior to that in which the total ran higher, but back in 1904 it was only $5,560,131, so this, the dominant item in point of quantity and total value, has been growing at a healthy rate and promises to hold the lead among the items of structural ornamentation.

The item of fancy or ornamental brick has continued to show decline for a number of years, its decline being practically coincident with the growth of what we call face brick. The maximum in this item was reached way back in 1896, when it attained a total value for the year of $763,140, so the production in 1916 was only about one-seventh of the total twenty years back. The indications are that this item may eventually be absorbed in the items of face brick, enameled brick and tile.

Enameled brick attained its maximum in 1913, with a total of $1,225,708. It held above the million mark during a period of four years, 1911 to 1914 inclusive, and since has shown a decline which suggests that perhaps tile has been replacing it.

Architectural Terra Cotta.

Architectural terra cotta presents something of a puzzle as to both what has happened and what may happen. It has been a growing item for twenty years, and logically ought to keep growing. It attained a maximum in 1912 of $8,580,436, declining in 1915 to not much more than half that amount, and recovering somewhat in 1916, but still remaining about 25 per cent. below the maximum or record production. This may have been due in a great measure to difference in the types of buildings which were the dominant features in different years. It is the office and heart of the city buildings which make the big call for this product, and if there are many of these to be built in the near future it should bespeak a great revival, while if the building runs more to factory buildings and to homes the situation will not be so promising for this product.

"Tile—Other Than Drains."

It is tile other than drain, an item not well enough named to be properly identified, and in need of a rechristening or something, which furnishes practically an unbroken reord of growth running back at least twenty-two years. Back in 1896 the total of this item was $1,618,127, while twenty years later it had attained a total of $6,475,464, a record excelled in the burned clay structural material products only by what is classed as fireproofing, or hollow block, another item in need of attention to its terminology.

There is a little publication called "Tilecraft," gotten out by the Associated Tile Manufacturers, at Beaver Falls, Pa. which keeps us reminded of this product and its progress and likely plays an important part in the present day progress. From this we get the idea that it is the bathroom which furnishes the greatest number of tile contracts, although other portions of private residences are given over to interesting tile treatment. Then when we turn from this and contemplate the word tile itself there comes to mind hearth and mantel work, flooring and interior wall work, outdoor work, and finally roofing, and the whole subject becomes confusing because of the ambiguity of the name and the wide and varied range of uses. Plainly, however, tile is becoming a more and more important factor in structural ornamentation, especially for interior work.

THE FUTURE OF COMMON BRICK.

A FEW YEARS AGO, in reviewing the common brick industry in connection with the big slump in 1911, and the possibilities of regaining lost ground, it was pointed out that this did not mean the beginning of the end of the common brick business, unless the trade wanted to lay down and quit and let it be the end. It was pointed out in substance that the future of the common brick industry will be largely what the people in the industry make it. The trade willed that the industry grow and it did. According to government statistics, the total value of brick and tile produced in 1911 was $125,000,000. It increased until in 1916, the banner year to date, when the total value amounted to $158,000,000, and so it will be in the future. The building brick industry will grow with the revival of building.

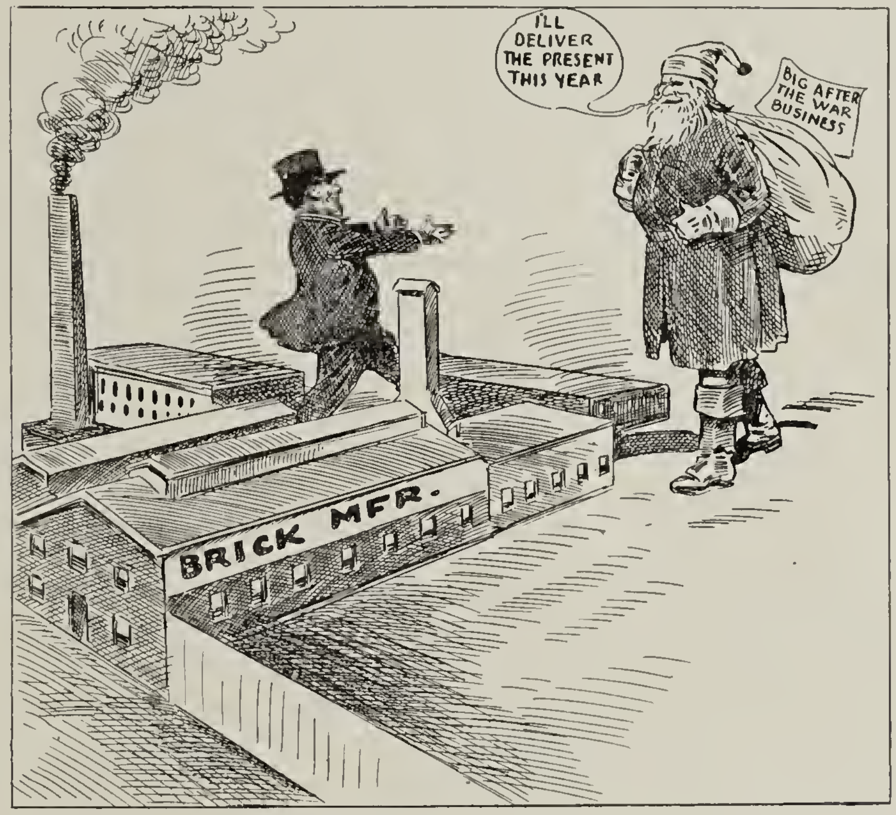
For quite a period now the common brick industry has had to meet competition from both inside and outside the ranks of clayworkers. Concrete has been a factor in crowding it out of foundation work and out of some wall construction, and in some sections of the country hollow clay block have furnished sharp competition and this product has replaced perhaps larger quantities of common brick in its way than has been replaced by concrete. Then there has developed a face brick industry, crowding the better part of the common product out of lots of face work. So the competition to common brick has been crowding in from all sides and still the volume of business in this product has not on the whole been disappointing. In some years it has shown a decided slump. In other years it has shown a decided revival and there has been a considerable see-sawing back and forth, but meantime not enough consistent progress has been made in common brick and not enough enthusiasm has been shown in its promotion to encourage the kind of progress that should be made and that inspires enthusiasm.

As was said some years ago in the review mentioned above, the thing common brick needs more than anything else is enthusiastic pushing and boosting, especially in the rural districts. This need has existed and been recognized year after year now for practically a decade. Some progress has been made but in this work of promoting and boosting common brick we are too near to the place where we started from. We are not moving with the fervor and enthusiasm that should characterize an effort of this kind.

At the various clay shows that have been held and expositions that are made everywhere of brick and clay products face brick comes to the front and overshadows everything else in the brick line. Various offerings in hollow clay block are in conspicuous evidence while common brick seems to be without enthusiastic friends or a place of prominence to attract attention. This is not as it should be but it is as it will be right along unless there is more definite concerted action on the part of those engaged in the manufacture of common brick looking to its boosting.

Common brick should be made a feature of and boosted in its own particular field in any and every way calculated to further its use as a building material to take the place of lumber and other materials of construction in the country districts. Also it may well be boosted in the larger cities. However, in these centers it takes fairly good care of itself except there is nobody to speak up for it as it should be spoken up for when rival offerings compete for the business such as concrete and hollow block. They have their ardent advocates and common brick is neglected except where its very small price presents temptation to some thrifty builder.

The common brick industry is not only the original or parent clayworking industry in this country; it remains today the big item and the backbone of the clayworking industry, consequently it is deserving of much more respect and much better treatment than it is getting. Everybody seems disposed to neglect common brick, to get out and push face brick, hollow block, concrete and something else, something that is new and novel. This is perhaps good business for those who follow it, but it is a bad thing for the common brick industry. If we continually neglect it and attention is centered on pushing other things the common brick industry will never amount to what it ought to.


I'LL DELIVER THE PRESENT THIS YEAR
BIG AFTER THE WAR BUSINESS
BRICK MFR.

The 1918 Santa.

There will always be a common brick industry just as there always has been since building first started. That, however, is not the question. There is no question of whether or not the common brick industry will continue to be, for it will. The point at issue is, shall it be made a live, thriving, enthusiastic business or left to continue dragging along this way without any universal persistent championing?

In this respect the future of the common brick industry is up to the people who are engaged in it. You can cause it to attract attention, make rapid progress and be an industry in which every man will be proud to be a part of and will be able to realize fair returns from, or you can let it alone as has been too much the practice of the past and let it continue on its uncertain way of having good seasons and bad, just as the Fates will. Which shall it be?

Written For The Clay-Worker:

BRICK AND BUILDING NEWS OF EVANSVILLE AND SOUTHERN INDIANA.

SINCE THE CLOSING of the European war prospects for the brick and tile manufacturers of Evansville and Southern Indiana have become much brighter and there is a feeling that trade is going to get a whole lot better from this time on. The past year or two has witnessed "tough sledding" for the manufacturers in the tri-state section, to use the words of a well known brick manufacturer at Evansville a few days ago. But there is a much better feeling in the trade now and Old Man Optimism is having his turn at the game. Of course nothing has materialized so soon after the signing of the armistice by Germany, but everything points to a wonderful revival in trade during the next year. The building program for the United States for the past few years, it is pointed out, has been way below normal and that there will be a great amount of building during the next twelve months in Indiana and other states of the central west the Evansville manufacturers firmly believe. Two of the plants of the Standard Brick Manufacturing Co. at Evansville have been closed down since the first of September and not a wheel has been turned in either plant. One of the company's plants, however, has been operated steadily at about one-half capacity. The company reports it has considerable material on hand at the present time. A great many of the workers of the Standard Company went to war, having responded to the calls of the draft boards and there are twenty stars in the service flag of the company. The Standard Company, while it has run far behind in its brick business, has made considerable drain tile and a ready market has been found for this. John Andres, the secretary and treasurer of the Standard Company, in an interview with the correspondent of The Clay-Worker the other day, stated that the total building in the United States last year was only about $300,000, this being about one-tenth of the annual normal building in the country. This shows that the country is far behind in its building program and Mr. Andres, who is quite optimistic over the outlook, says it stands to reason that when conditions become normal again, that building operations will take on new life. Architects and contractors at Evansville say they look for one of the best building years in 1919 for many seasons past and they are preparing for the rush. A few days ago the Bicknell Improvement Company at Bicknell, Ind., let the contract for a large number of dwelling houses, and when these have been completed in February, contracts for more will be let. In Evansville it is expected that considerable building of a public character will be done. During the past two years all public improvements in Evansville and in most of the other Southern Indiana towns have been at a standstill.

Gilbert Langrebe, manager of the Huntingburg Pressed Brick Company, at Huntingburg, Ind., who closed his plant several months ago to go to a training camp, is expected home within a short time, now that the war is over and his plant will start running again. Mr. Langrebe received his commission and did his full part as a soldier, but like most every other soldier he is glad the war is over.

The plant of the United States Brick Company at Tell City, Ind., has not made any brick during the past year, but considerable drain tile was turned out at the factory.

Brick and tile manufacturers, and makers of pottery at Evansville and in other towns along the Ohio river, were interested in the annual convention of the Ohio Valley Improvement Association, that was held at Louisville, Ky., December 11 and 12, and many of the manufacturers attended. With the closing of the war in the Ohio Valley manufacturers are looking forward to more and larger markets in Cuba, Mexico and the countries in Central and South America, and they point out that the improvement of the Ohio river will be a step in the direction of acquiring these markets. The Ohio Valley Association has gone on record in favor of a government barge line on the Ohio river and it is expected that this will be established in the near future. The Evansville Manufacturers' Association and the Evansville Chamber of Commerce have appointed committees to arrange for river terminals at Evansville that will cost between $150,000 and $200,000, and Henry C. Kleymeyer, general manager of the Standard Brick Manufacturing Company, is on this committee.

The Stevens Building Products Company of Evansville, held its annual election of directors a few days ago and the following were chosen to serve the ensuing year: James Haughton, William Abeler, Ben Poelhaus, F. C. Stevens and W. P. Woods. The company recently built a new brick plant at Evansville, where bricks are made by a patented method, this being the only plant of its kind in the United States, it is said. The company began operations a few days ago and is now turning out a fine grade of brick.

A few days ago the steamer, Joe Fowler, raised a barge of brick that had been sunk in the Diamond Island chute in the Ohio river a few miles below Evansville that was towed to Rose-Claire, Ill. The barge was sunk during a storm and it was first thought it would be a total loss.

The large pottery plants at Evansville are being operated on steady time now and the business outlook is most promising. During the war pottery manufacturers were handicapped by car shortage, labor scarcity and inability to get materials on time and many other things, but they managed to keep running and weathered all storms. The manufacturers are of the opinion that the year 1919 will bring them in a nice volume of trade.

Frank Read, brick manufacturer at Mt. Carmel, Ill., was a recent business visitor in Evansville, and reported trade in his locality most promising since the close of the world war.

It is expected that many improved highways will be built in Southern and Central Indiana during the coming year and brick manufacturers all over the state will be interested in this announcement. A report from Decatur states that thirty roads will be constructed in Adams county within the next year as the result of the lifting of some of the building restrictions. Many thousand dollars will be spent in the building of the roads in that county, some of which will be constructed of brick. Most of the links in the Dixie Bee Line highway from Danville, Ill., to Adams, Tenn., have been completed and Mayor Benjamin Bosse, of Evansville, the president of the association, says that the public inspection of the highway will be one of the events in the near future. The Dixie Bee Line highway connects with the big Dixie Highway at Adams, Tenn.

A HOOSIER.

THE NEEDS OF THE DAY.

It is comparatively easy to lay out a line of action and a course that should be pursued by the people of the country in the days to come that we may attain the return to the usual paths of life with the fewest hitches and the least suffering, but the real need of the day is for some new method of appeal to obtain and hold the interest of the people. Campaigns of publicity of one kind and another have been waged so persistently and with so much force and noise that the people are fed up on almost every mode of appeal known. Perhaps what the needs of the day really call for is a period of soft pedal work as a refreshing contrast to the noisome times we have been going through.

MEETING OF REFRACTORY INTERESTS.

Vital Problems to the Industry Considered and Steps Taken To Enlarge Organization.

FULFILLING a request from the War Service Committee on Refractories to organize the refractories industry on the broadest scale possible, sixty odd manufacturers of refractory products met in the Green Room, Congress Hotel, Chicago, December 12, with the result that steps were taken to enlist the services of each and every refractories manufacturer in the United States in an organization known as the Refractories Manufacturers' Association.

The old organization by that name, with its eighty members, was taken as the proper machinery and nucleus for the purpose in view, the old officers were continued and such modifications made in the old by-laws as to make it possible and advantageous for all of the several hundred manufacturers of refractories to join and lend a helping hand in placing the industry on a safe and sound basis. Co-operation was the keynote.

Mr. J. J. Brookes, Jr., of the Harbison-Walker Co., chairman of the War Service Committee, representing the refractories industry, read a report of the work accomplished and made recommendations, which were adopted in full when the Resolutions Committee made its report.

The committee's report showed the need of price fixing, by government authority, in the industries furnishing materials for war needs and cited the effect this had on the refractory industry. The importance of the refractories industry was early recognized by the War Industries Board, which greatly assisted the refractories manufacturers in their endeavor to be of assistance in furnishing correct and needed material for use in war work.

Mr. Catlin's work on the War Industries Board representing the refractories industry, was most important and as a result the product manufactured had a definite standard as to size and shape. The report also showed the strides the industries had made in the elimination of waste, economy in general, and the making of a better product.

Mr. J. A. Ramsey, of the Elk Fire Brick Co., St. Marys, Pa., made a forceful talk urging a larger organization and citing the many benefits to be gained by closer co-operation. He dwelt at some length on the present day competition and the need of good clean association work in meeting the question of determining costs, improvement of the product and labor. He congratulated the industry as a whole on the services rendered them by the Refractories Manufacturers' Association's committees on cost, welfare and standardization and felt that the one great benefit was the elimination of odd sizes.

Mr. R. M. Howe, of the Mellon Institute, Pittsburgh, Pa., made an informal talk, describing the work of that institution, particularly referring to the research work in the laboratories in the interests of refractory material.

A delightful luncheon and theater party occupied the time of the delegates in the evening, the real construction work of the convention being accomplished the morning of the 13th, when the following resolutions were passed:

We, the Committee on Resolutions, appointed by the Refractories Industry meeting called by the War Service Committee on Refractories, report that it was the decision of the meeting that the present organization of The Refractories Manufacturers Association be continued, and that an effort be made to enlarge the organization by securing the enrollment of all manufacturers of refractories, who are not now members of the Association; and further, that the following recommendations made by the War Service Committee on Refractories be considered and adopted by The Refractories Manufacturers Association:

1. That in any existing association or organization, the prime prerequisite of membership shall be the manufacture of refractories at the time of application and election.

2. That up-to-date machinery be provided for the gathering and dissemination of statistics vital to the industry as a whole.

3. That copies of all charts, catalogs, reports and similar publications prepared and issued from time to time for the purpose of standardizing the product of the industry, by any group or commitee in the Association be made available to every manufacturer of refractories, irrespective of his membership in that group, committee or association.

4. That a serious study be given the subject of export sales under some such plan as is authorized by the Webb law.

5. That a research laboratory or bureau be maintained for the solution of problems common to the industry. Many individual manufacturers who would find the expense of conducting a private laboratory burdensome would gladly contribute to the support of one dedicated to the general good of the industry.

6. That meetings of the refractories industry, irrespective of affiliations, be held at least once every three months for at least a year and that any manufacturer of refractories be entitled to voice and vote at these meetings. Also, that publicity be given sufficiently far in advance of the date for which these meetings are called, so that any manufacturer of refractories who fails to receive a mail notice to the same, may be fully apprised of the date and place of the meeting and of the fact that his co-operation in the work of the industry is welcome.

7. That the present War Service Committee on refractories, consisting of P. S. Kier, R. D. Hatton, John T. Roberts, W. A. Stanton, and J. J. Brooks, Jr., continue to serve as a point of contact between the refractories industry and the Department of Foreign and Domestic Commerce and other departments in Washington, until such time as it may be relieved of this duty by action of the entire industry in meeting assembled.

Furthermore, We, the Committee on Resolutions, reiterate the sentiment embodied in a resolution adopted at the meeting of the refractories industry in meeting assembled, endorsing the work of the War Service Committee on Refractories and expressing confidence in its purposes and appreciation of its far-seeing and constructive recommendations.

ARTHUR P. TAYLOR,
FRANK G. EVATT,
C. C. EDMUNDS,
C. A. GARDNER,
G. W. GREENWOOD,
D. R. POTTER,
J. L. GREEN.

Friday afternoon was devoted principally to a talk and a discussion on the Arthur Jerome Eddy open price policy by Mr. McIlvaine, of the Babson's Statistical Organization. Mr. George H. Tefft, of the Clay Products Association, told of the operation and benefit of such a policy in his organization recommending same to the refractories interests. Following a long discussion on this subject, the matter was referred to a special committee appointed, of which Mr. R. D. Hatton, of the Laclede-Christy Clay Products Company, St. Louis, Mo., was selected chairman.

It was expected that this committee will be ready to make its report at the next meeting of the Association, which is to be held in Pittsburgh some time during the latter part of January. Mr. P. S. Kier, of the Kier Fire Brick Co., Pittsburgh, is president of the Refractories Manufacturers' Association, while Mr. F. W. Donahoe is the secretary.

MARRIAGES AND HOMES.

Authorities are now pointing out that there is a direct relation between the number of marriages and the number of new homes built, and they very naturally reason from this that a big crop of weddings means a busy time in home building. We can easily agree upon this, for marriage has always been recognized among our people as a first step toward the establishing of a home and the upbringing of a family. The question of the day is, are we to have more than the usual number of marriages as the boys return from the army to peaceful ways? If so, it means more home planning and building, and that is the thing most of the trade is looking forward to as likely to happen.

BIG WEEK FOR HIGHWAY IMPROVEMENT BOOSTERS.

Annual Meeting of National Paving Brick Manufacturers Association, Held in Chicago, Congress Hotel in Conjunction With Highways Congress. Standard Size Brick Adopted Federal Highways System Indorsed Congress to be asked to Pass a Bill for $500,000,000 Appropriation for Good Roads.

"THE most important meeting in the history of our organization," this statement by one of those present will give a hint as to how the members felt about the meeting of the National Paving Brick Manufacturers' Association, held in Chicago, Congress Hotel, Monday, December 9. This meeting followed sessions of the board of governors, advisory committee and other special committees, which took place on Saturday. The attendance was the largest in the history of the Association for the delegates were drawn there not only by the importance of their own Association work, but by the added incentive the Highway Congress under the joint auspices of the American Association, State Highway officials and the Highway Industries Association.

Owing to war conditions, the government restrictions on road building and the small amount of activity or opportunity of doing anything in the interests of the industry during the past year or two, naturally all the manufacturers now that most restrictions are removed, manifest the keenest interest in the many problems confronting them.

With the great demand that is perfectly apparent throughout the country for need of permanent improvement in road and highway construction, the members of the N. P. B. M. A. feel that everything must be done to resume active operations.

It was not only for these reasons that a large attendance was called out, but every paving brick manufacturer in the country felt he must lend his presence, influence and support to the great effort that was taken jointly with the Highways Industries Association and the American Association of State Highway officials.

The program of the annual meeting was brief though time was found to discuss many of the important problems which face this as well as other manufacturing industries. The question of cost of manufacture and margin of profit in keeping with the new standards of wages, naturally was a live topic. It seems that every organization these days finds this the main point of interest, and rightly this is so for never before were we face to face with labor and manufacturing costs that we are today.

The general belief that the wage scale will never return to the pre-war level is firmly embedded in the minds of all manufacturers and the natural solution to this is, therefore, that a selling price should be asked that would give a fair margin of profit and protection in the demands that labor and living costs will make upon the individual plant owner.

Other questions, such as hours of work, the coal situation, size of brick road construction and the general proposition to be put forward by the Highways Industries Association were thoroughly discussed by the fifty odd paving brick manufacturers and engineers present.

The Association's business is handled in a different fashion than formerly and presumably is much more satisfactory to all concerned. The Association now has a board of governors which is composed of members representing territorial districts and district associations. The officers of the Association are on this board and it is, therefore, really an executive committee, all business to be brought to the attention of the Association is first discussed and prepared for presentation. In this manner much more effective work is done with little loss of time to the individual members. This board of governors is supplemented by an advisory committee and other committees selected for purposes.

In making the report of the board of governors, W. W. Winslow, secretary of the organization, read resolutions, which were adopted in their entirety by the members present. The most important of these were the adoption of a standard size of brick, 3 by 4 by 8½ inches and the appointment of a special committee on cost accounting which would make a careful study of the matter and recommend some standard system which could be adopted by all the members and thus make for a more uniform method of cost finding. It was recommended that publicity be given through the "Dependable Highways" of the various territorial districts by means of map or drawing showing geographical location of headquarters, territories and names of all officials in each locality.

It was also recommended that a careful, thorough study of the proposed freight rates ruling be made and a protest offered through the congressman of each member providing that there is any likelihood of the adoption of any radical change that would be detrimental to the interests of vitrified paving brick manufacturers and highway construction.

During the final session of the meeting the manufacturers were favored with an address by S. M. Williams, president of the Highways Industrial Association, who spoke of the purposes of his organization and urged the co-operation of the N. P. B. M. A. in such a worthy cause.

Nearly all the paving brick manufacturers remained over for the Highways Congress, which was held December 11 and 12, Congress Hotel, so that they were quite conspicuous in the lobby and convention hall throughout the week.

The Highway Congress.

It was at this great meeting, the first Highway Congress to be held in the United States, that the various organizations working in harmony promulgated a plan and policy for a separate and distinct National Highway Commission and a bill covering this policy is to be immediately introduced in Congress and pressed to a final enactment.

It was clearly shown in this great Chicago meeting that this movement will create a new epoch in road building in this country and this opinion was justified by the attendance of great delegations from every state in the Union composed of men determined that the highways of the country shall be placed on an equality with the other two agencies of transportation, i. e., waterways and railroads so that the public welfare of the country will be served to the utmost.

All during the two days of the meeting—in the lobbies, and on the convention floor—intense conferences were held, informal and otherwise, on the real issue before the congress, the indorsement of a Federal Highway System and recommending the appropriation of $500,000,000 for the construction and maintenance by the Federal Government of an interstate road system.

The resolution as adopted follows:

Whereas, The President of the United States in his recent message to the Congress, recognized the value of improved highways in the general transportation system of the nation and definitely recommended and urged their rapid development; and

Whereas, This work is necessary to give employment to our returning soldiers and also to furnish worthy projects on which unemployed labor can be engaged during the period of readjustment; and

Whereas, We recognize the necessity for a well defined and connected system of improved highways in order to expedite the distribution of large volumes of food stuffs now wasted on account of the lack of prompt and adequate highway transportation and to better serve the economic and military needs of the nation; therefore, be it

Resolved, That a Federal Highways Commission be created to promote and guide this powerful economic development of both highways and highways traffic and establish a national highways system; be it further

Resolved, That the present appropriations for federal aid to the states be continued and increased and the states urged to undertake extensive highway construction so as to keep pace with the development of this country and its transportation needs, and that in carrying out the provisions of the present Federal Aid Act or any amendment thereto that the state highway departments shall co-operate with the Federal Highways Commission; be it further

Resolved, That all governmental activities with respect to highways be administered by the Federal Highways Commission.

The resolution committee which presented the report in regard to the Federal Highway system was as follows: Paul Sargent, Augusta, Me.; W. T. White, Cleveland, Ohio; George Deihl, Buffalo, N. Y.; George E. Johnson, Lincoln, Neb.; W. O. Rutherford, Akron, Ohio; J. M. Lowe, Kansas City, Mo.; W. G. Thompson, Trenton, N. J.; A. N. Johnson, Chicago, Ill.; John Kroft, Montgomery, Ala.; William E. Metzger, Detroit, Mich.; A. R. Hirst, Madison, Wis.; W. P. Blair, Cleveland, Ohio; J. D. Clarkson, St. Joseph, Mo.; Prof. A. H. Blanchard, New York City, N. Y.; H. S. Quine, Akron, Ohio; Ira Browning, Salt Lake City, Utah; A. P. Sandles, Columbus, Ohio; G. P. Coleman, Richmond, Va.; S. F. Beatty, Chicago, Ill.; H. O. Cooley, Aberdeen, S. D.; C. F. Adams, Chillicothe, Mo.; C. H. Houston, Chattanooga, Tenn.; W. A. Alsdorf, Columbus, Ohio.

Other resolutions were adopted thanking Governor Lowden, the press and various good roads and trails associations for co-operation.

BROTHERHOOD.

An interesting and timely little pamphlet has come to hand with the compliments of John D. Rockefeller, Jr., with the suggestive title of "Brotherhood." It is the printed address made before the Civic and Commercial Club at Denver, Colo., last June, and it deals largely with the subject of brotherhood in industry. Incidentally, however, a point is touched upon which deserves much more than passing attention right now, and that is brotherhood between the government and business. Every business man easily recognizes the advantages that should accrue to both the government and business from a closer walk and a better understanding, but heretofore the politicians have been given too much to coddling the laboring man and the farmer, and treating the business man as a sort of common danger threatening both. The war has done something to break down this false attitude, and it has at the same time emphasized the need for co-operation between the government authorities and the business men. It is a good start that we should make the most of, for unless our wise men are fooling themselves and the rest of us we have reached the age in the world when there must be more of the spirit of brotherhood, between man and man, between the government and business, and between the nations of the world themselves.

THE ATLANTIC CITY CONFERENCE.

That great gathering of business men held under the auspices of the Chamber of Commerce of the United States at Atlantic City, to discuss ways and means for the upbuilding of industry and commerce was too big a thing for one to comprehend at a glance and it was too big a thing for one to undertake a comprehensive review of it in brief space. It was a great manifestation of the spirit, desire and enterprise of America, of industrial America, and it was a fit showing to follow our great military demonstration for the liberty and peace of the world.

Among the thoughts of broad interest given specific endorsement one pertained to the railroads, and recommends their return to private ownership under an improved plan of supervision that will permit the exercise of both-co-ordination and private enterprise.

Another, asking the repeal of the Sherman anti-trust law, serves to call to mind the fact that there is room to properly protect the public against extortion and at the same time permit organizations in business which will insure the development and stabilizing of industry.

The conference has served to open the eyes of both the business men and the government authorities to the possibilities for good which may be derived from a proper co-operation between the government and the business interests of the country through their various organizations. It ought to mark the beginning of a new era in which business and the government will work in closer harmony, and from which all should benefit wonderfully.

As we have said, the convention was a remarkable event and the proceedings were very interesting. A verbatim report will be given in full in the January issue of the "Nation's Business," and those of our readers who appreciate fine speeches and lofty sentiment coupled with the best business thought and experience of the captains of industry from all sections of the country, should by all means obtain a copy of the forthcoming "Nation's Business," which is the organ of the Chamber of Commerce of the United States and one of the meatiest publications in the commercial world. Any partial or superficial report of the great Atlantic City meeting will be inadequate. To appreciate the sentiment and purpose one must get the full report and we advise readers of "The Clay-Worker" who are not regular readers of the "Nation's Business" to get the January issue.

TRACTORS AS DRAINAGE FACTORS.

The broadening use of the tractors on the farm promises to increase the interest in farm drainage and to enlarge the demand for drain tile materially. While the war was on the cry was for more extensive farming, and a wider use of such labor saving devices that we might produce more with fewer men. Now there promises to be a turning to more intensive farming so as to produce more on the same amount of land at less cost. That underdrainage helps is now pretty well understood, and now the tractor will help make this more easily possible by becoming a factor in the ditching which heretofore has been a burdensome part of the work. On the other hand, proper drainage makes it easier to use tractors in the early plowing where without it the ground would be too wet and soft. So the tractor promises to be quite a factor in extending the use of drain tile on the farm.

SOMETHING NEW IN STEAM SHOVELS FOR THE SMALL PLANT

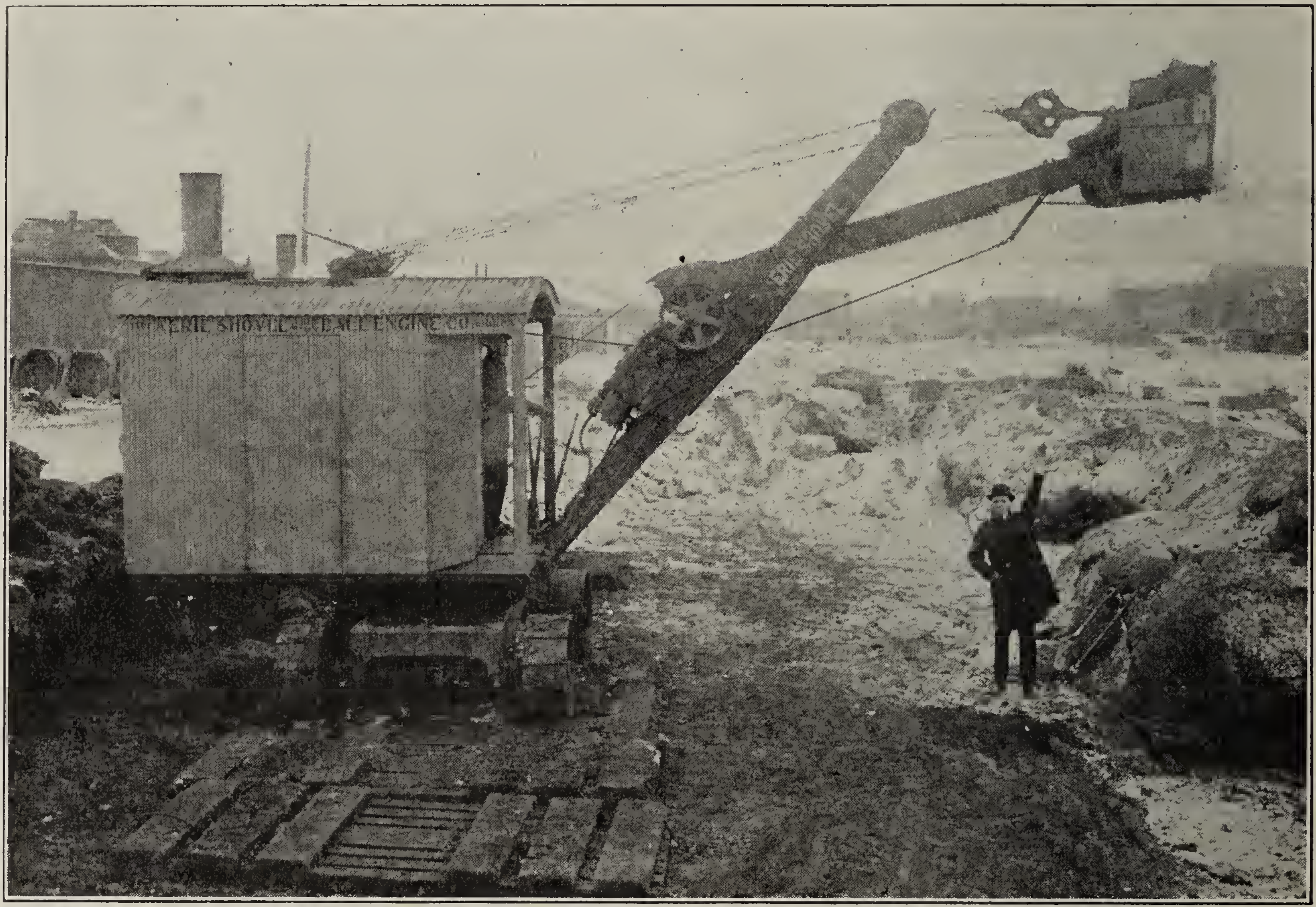
STEAM SHOVELS have been in use in the large brick plants of the country for many years, but of recent years there has been a demand for a shovel for yards of medium or average capacity, and in this day of scarcity of labor and high wages, the clayworker is taking advantage of every possible labor saving and cost reducing appliance. The Ball Engine Company, of Erie, Pa., manufacturers of Erie Steam Shovels is offering to the trade a small shovel which they have christened the "A" Erie, which weighs only thirteen tons, but has power enough to dig stiff clays and lighter shales without blasting. The "A" Erie is light enough to move around the pit easily. and yet is sturdy enough to do real steam shovel work.

The first "A" Erie was built in 1917 and has now seen eighteen months of strenuous service, working right through the severe weather of last winter (which you will all agree was some winter), digging frozen earth with the thermometer 20 degrees below zero. In spite of such severe service, the first "A" shovel required only one repair in the eighteen months, and this expense of $20 is the only repair made on the shovel to the present time. All of these little ½ cubic yards "A" Erie shovel have given just this dependable sort of service.

The "A" is light enough to move around the pit easily and rapidly. In fact, it travels up a 25 per cent. grade under its own power. It has two traveling speeds; 1 to 2 miles per hour on "low," and 2 to 3 miles per hour on "high." It is steered by power, using the same power steering arm which has been such a success on the six hundred Type "B" Eries (¾ cu. yd.) which are in service. This shovel is equipped with a dipper of ½ cubic yard capacity, 3 dippers fill a 1½ cubic yard wagon or car, 4 dippers fill a 2-yard car. The entire machine is designed and built to operate this ⅞ cubic yard dipper in hard materials without any undue strain on any part.

The "A" Erie is rated to excavate 30 to 40 cubic yards per hour. This capacity has often been exceeded when conditions have been favorable to larger output. The attainable working speed of the "A" Erie is 3 to 6 dippers of material per minute, although the average speed under actual working conditions is usually 1 to 3 dippers per minute. The shovel's large range of action is well illustrated by one of the photos shown. The man who is standing in the pit is a six-footer, but the "A" Erie makes him look like a little fellow, because it dumps 13 feet above the level of the cut (measured from bottom of dipper door, open). The other photo that shows the "A" Erie loading wagons that are standing on an 11-foot bank.

This high reach enables the "A" to cut right up to the top of a high bank of clay. It is not necessary to keep a man on top of the bank, to cave down the material with a crowbar. The number of move-ups is reduced to a minimum by the long reach. The "A" makes a cut 28 feet 4 inches wide at floor level, or 46 feet 4 inches wide at 8 feet above floor level. The width of cut and height of dump, as given, are based upon the boom being at the usual angle of 47½ degrees from the horizontal. The height of dump can be increased beyond 13 feet, as high as 16 feet 5 inches by raising the boom. Likewise the width of cut can be increased by lowering the boom. It is a simple matter to raise or lower the boom to suit the conditions, as the "A" Erie is equipped with a boom hoist.



Type "A" Shovel Owned by the Charles Fry Construction Co., Erie, Pa The Man Under the Shovel is a 6-Footer, Not a Boy.

The manufacture of "A" Eries has just been placed upon a production basis, but it is not a new machine. "A" Eries have been giving excellent service not only in excavating clay and shale for brickyards, but also on such work as cellar excavation, trench digging, road grading, and sand and gravel excavation.

DRAINAGE CONGRESS HOLDS AN IMPORTANT MEETING.

THE seventh annual meeting of the National Drainage Congress was held in the Y. M. C. A. building, Chicago, December 13 and 14. An unusually large crowd, including nearly thirty drain tile manufacturers, was on hand to lend their presence, support and influence to the important reclamation work, so vital to the interests of the country today.

Able statesmen, engineers, lawyers, business men, contractors and scientists discussed vital questions connected with drainage and the associated problems of river regulation, flood control, naturalization and development of natural resources, water power and unused lands.

Attacks upon government military engineers, and a demand for a federal department of public works, with an experienced engineer at its head, as a Cabinet member, featured the opening session. The plan of Secretary of Interior Franklin K. Lane for the purchase by the government of vast quantities of land, its reclamation and the placing thereon of returned soldiers and sailors under government auspices, was also condemned by several speakers.

Type "A" Erie Shovel, Owned by Schreier Brothers, Buffalo, N. Y., Loading Wagons on an Eleven-Foot Bank.

Prof. F. H. Newell, of the University of Illinois, former director of the U. S. Reclamation Service, voiced the belief that a paternalistic system would not be approved by the soldiers themselves.

"The theory of the average man—and that includes the soldier," said Prof. Newell, "is that he would rather live in a self-created hell than in a paradise made to order for him by some one else."

"While government engineers—army men—are splendid gentlemen," said Isham Randolph, "they are not best fitted to supervise internal improvements. We must have the work of internal improvements in the nation correlated and co-ordinated. It must not be distributed among a number of agencies, but should be under one head, with an eye single to the general public interest."

Mr. Randolph pointed to the tremendous amount of power wasted annually through failure to conserve water power. He quoted government statistics to show that there is annually wasted an average of 29,000,000 units of electric horse power, which, he asserted, meant the use of nearly 400,000,000 tons of coal per year. He also defended the Chicago drainage canal against the charge of lowering the lake levels by showing that the lake stages were never so low as during the average five year period prior to the opening of the canal.

Giving figures regarding the quantity of excellent arable land that could be reclaimed by drainage, Mr. Randolph asserted this amounted to over 75,000 square miles, or about 48,000,000 acres, of which 26,000,000 acres are in the Mississippi Valley alone, in the most fertile farming section in the world.

Prof. George W. Pickels of the University of Illinois, warned against the assumption that all wet land is fertile, but said vast areas now subject to reclamation would be extremely valuable.

Frank W. De Wolf, state geologist, pleaded for greater coordination of effort among the states; E. K. Morse of the Pittsburgh flood commission told of efforts made by his organization for flood control, and also advocated a department of public works.

The Congress adjourned Saturday morning after election of officers, appointment of committees and the adoption of resolutions. We print herewith such as we think of special interest to The Clay-Worker's readers:

(Continued on page 558.)

OFFICIAL ANNOUNCEMENT.

THIRTY-THIRD ANNUAL CONVENTION OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION AND ALLIED ORGANIZATIONS TO BE HELD AT THE WILLIAM PENN HOTEL, PITTSBURGH, FEBRUARY 2 TO 8, 1919.

To Members N. B. M. A.:

Glad Tidings! The dreadful war is over, "over there," and throughout the length and breadth of our great Nation there goes up a joyful shout of thanksgiving. A heartfelt prayer of gratitude is on the lips of every mortal. Each and every one is echoing the glorious thought PEACE ON EARTH FOR EVER MORE. The world turns from the fearful strife and carnage to thoughts of peace and peaceful pursuits. We are at the dawn of a new era; the world must be rebuilt and made a suitable abode for contented and industrious people who will again devote themselves to useful labor and the pursuit of happiness, instead of feverishly striving to destroy one another.

This new era is the opportunity for the clayworkers of the Nation to get together and co-operate to mutual advantage for the proper promotion of every branch of the industry. It is a great occasion for a **Peace Convention** to consider the needs of the industry and the best methods of readjustment to meet the demands for clay products that will follow with the re-establishment of all industries, whether considered essential or non-essential. As a matter of fact, the brick industry is an essential industry. Particularly so in peace time. The production of indestructible, fire-proof sanitary homes is certainly second in importance to no other industry, and in the time to come will be given the consideration by those in authority which its vast importance deserves. Soon again the cry will be for BRICK! BRICK!! MORE BRICK!!! The demand will be insistent and to meet it will require the best efforts of our craftsmen who will be handicapped in various ways, but chiefly by the shortage of labor.

To meet this and other vexing problems which now confront clayworkers calls for hearty co-operation, and the entire craft is urged to gather at Pittsburgh, Pa., the week of February 2 to 8, 1919, and participate in the thirty-third annual convention of the National Brick Manufacturers' Association and all allied organizations, in response to the cordial invitations of the city's chief official, Mayor E. V. Babcock, Pittsburgh's great commercial organization, the Chamber of Commerce, and the Pennsylvania Clay Club, which includes practically all of the brickmakers of that locality, each and all of whom will welcome us with open handed hospitality.

Hotel Headquarters.

Pittsburgh is the logical place for a great Peace Convention at this time, for it is among the greatest industrial centers of the Nation. Its old sobriquet, "The Smoky City," has of late given way to the more modern name, "The Armory of the Nation." It is a great brick city and one of its finest brick structures is the new William Penn Hotel which towering above neighboring skyscrapers is one of the most conspicuous buildings of the city. It is one of the finest and largest hotels in the world, so it has been selected as headquarters convention week. In equipment it is surpassed by no hotel anywhere, at home or abroad, and will afford admirable facilities for the comfort and convenience of the delegates, and withal at very modest rates.

Delegates and those accompanying them, will be accommodated on the European plan at the rate of $2.50 per person for two or more in a room. Those desiring single rooms or special accommodations will be booked at the regular rate governing same, which ranges from $2.50 per day up. Every guest room in the William Penn has a bath. Its dining rooms, banquet halls and convention accommodations are sumptuous, and it is so spacious that our entire membership can be accommodated.

All Allied Organizations Invited to Participate.

As usual, all the allied organizations are invited to meet at the same time, and ample accommodations will be afforded them for the orderly transaction of all business offairs. The National Paving Brick Manufacturers' Association will hold its sessions at the William Penn, as also will the National Clay Machinery Manufacturers' Association and the National Building Brick Bureau. Other organizations desiring accommodations are requested to communicate with the Secretary.

The American Ceramic Society will meet at the Fort Pitt

Sky-Line of the Heart of Pittsburgh, the Monongahela River in the Foreground.—Courtesy Pittsburgh Chamber of Commerce.

Hotel, which is under the same management as the William Penn.

As Pittsburgh is the heart of the clay industries and is within one night's ride of 45,000,000 people, a large attendance is assured. In due time an appropriate program will be arranged, providing for the consideration of all the important questions which now perplex clayworkers, and it is anticipated much good will result to those engaged in any and every line of clay work. As heretofore, the convention will combine business with pleasure, but the festivities will be of a character to facilitate the business features.

Those desiring further information as to the requisite of membership in the N. B. M. A., or any other detail of the convention arrangements are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,
GEORGE H. CLIPPERT, President.
THEO. A. RANDALL, Secretary.

AMERICAN ROAD BUILDERS' ASSOCIATION TO HOLD CONVENTION IN NEW YORK.

At the invitation of Mayor Hylan, the Merchants' Association and other civic organizations, the American Road Builders' Association has decided to hold its sixteenth annual convention in New York City, the week of February 24. This is the first time in the long history of the organization that an annual convention has been held in the city of New York, and every effort is being made to make the meeting an event in keeping with the municipality in which it is to be held.

After careful consideration of the facilities and the location of the meeting places available, the executive committee, in which the active direction of the association's activities is vested, has chosen the Hotel McAlpin. The convention will begin on Tuesday, Feb. 25, and end on Friday, Feb. 28. The program which is being prepared, will include technical sessions every forenoon and afternoon, a dinner on one evening, and exhibition by material and machinery dealers and manufacturers, and a number of entertainments. The exhibition will be held in the roof garden and will comprise displays of models, photographs, sample of materials, and the like.

The American Road Builders' Association, as its name implies, is a national organization of the men who are actively engaged in various capacities in the construction and maintenance of highways—both country roads and city streets. It includes in its membership almost all of the men prominent in this field, among whom are many of national and international reputation. Like other organizations of men who do things, it has contributed a large proportion of its members to the nation's one big job, but enough remain at home in the all-important work of keeping the country's roads up to the top notch of efficiency to make its annual meeting the chief event in the road building field.

The American Road Builders' Association was organized in 1902, primarily to provide a common meeting ground for the men then in charge of road building in the few states that had established state highway departments. The good roads movement was then little more than in its infancy, but as the demand for better highways increased and state after state adopted the state aid principle in the improvement of its highways, the scope and influence of the association grew wider and its membership increased. Its first convention was held at Detroit, Mich., Feb., 1903, and has been followed by others at Hartford, Conn.; Port Huron, Mich.; Pittsburg, Pa.; Columbus, Ohio; Indianapolis, Ind.; Rochester, N. Y.; Cincinnati, Ohio; Philadelphia, Pa.; Chicago, Ill.; Oakland, Cal.; Boston, Mass., and St. Louis, Mo.

An innovation in the method of holding meetings of this kind was made at the Columbus convention in 1909 by the holding of an exhibition of road building machinery and materials. This feature proved so popular and so valuable that it was made permanent and there have been similar, but larger and more varied displays at all the subsequent conventions except the one at Oakland, which was held jointly with another organization at the time of the Panama-Pacific International Exposition, and the one at St. Louis, in 1918. The exhibition of heavy machinery was omitted for patriotic reasons this year, the officials feeling that despite the practical value of such display they were not justified in asking manufacturers and dealers to get together and ship the extensive displays they were in the habit of making. In place of the usual show there was a large and interesting exhibition composed chiefly of photographs, models, literature, and the like. As already noted, the same plan is to be followed this year.

CERAMISTS OF NORTHERN OHIO HOLD INTERESTING MEETING.

The fourth meeting of the Northern Ohio section of the American Ceramic Society was held in Cleveland Monday, Dec. 9, at Hotel Olmsted. A short business meeting was held in the afternoon. Following this was an interesting program. W. M. Clark, of the National Lamp Co., gave a very able review of the ceramic features of the recent Chemical Exposition. Dr. A. F. Gorton, of the Buckeye Clay Pot Co., Toledo, Ohio, presented a paper "Observations on Apparent Causes of Failure of Lead Glass Pots." C. B. Stowe, of the Stowe Fuller Co., Cleveland, read a paper on magnesite, both foreign and domestic and the successful replacing of it with a synthetic magnesite in the manufacture of magnesite brick. These papers were followed by a general discussion on after-war adjustments in ceramic industries.

In the evening a joint session was held with the Cleveland section American Chemical Society at which time Dr. W. E. Washburn, National Research Council, spoke on "Refractory Materials as a Field for Research." The subject matter of this talk was based on his findings as a member of the National Research Council and proved of great interest to all.

PROF. WILLIAMS GOES TO WASHINGTON UNIVERSITY.

Prof. Ira Williams went to Seattle in the early part of November, to fill the newly-created chair of ceramics at the University of Washington. Prof. Williams is studying the condition of the industry in the state, and gathering information as to the clay deposits of Washington, with a view to developing the natural resources of the country. He has had many years of practical experience along these lines, and was recently connected with the Oregon Bureau of Mines. Prof. Williams is a graduate of the Iowa University, and went to the University of Ohio for post-graduate work, where clay ceramic work has been especially developed.

VALUABLE BRICK MATERIAL.

The slime which accumulates at the various mines in the Kolar gold fields, in India, is now being mixed with clay and made into bricks, instead of being treated as a waste product, as heretofore. The bricks made in this way are said to be superior to those acquired from outside sources and are used extensively in lining circular shafts and other construction work carried on by the mining companies. Later on it is proposed to make fire brick, clay crucibles, and artificial stone.—Popular Mechanics Magazine.

Even the defeated will profit eventually and come to feel that it was the beginning of liberty and peace for them, too.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

In the Market for Brick Machinery and Appliances.

Editor The Clay-Worker:

I am in the field for brick machinery, including clay cars, dryer cars, pallets, dry kilns, kilns, etc. I have an excellent body of clay located in a good district, with a good demand for building brick. As I am new at the business, will appreciate any pointers you can give me.

Yours very truly,
Alabama. H. M. JOHNSON.

Wisconsin Clayworkers to Meet in January.

Dear Mr. Randall:

The nineteenth annual convention of the Wisconsin Clay Manufacturers will be held at Milwaukee, January 30 and 31, 1919. Headquarters will be at the Republican House and a program of special interest to Wisconsin manufacturers will be presented.

Yours very truly,
SAMUEL WEIDMAN, Secretary.

What is a Fair Royalty for a Brick Plant?

Editor The Clay-Worker:

I am figuring on leasing a brick plant that has four updraft kilns and one Freese brick machine that will turn out about 30,000 common brick per day, and the value of the whole plant, including the real estate, is worth around $12,000. I should think this plant could make from two or three million brick from May 1 to November 1, of each year, and I would be glad to know what royalty per M you would consider as fair and just for me to pay?

A SUBSCRIBER.

Hudson River Brick Man Satisfied.

Editor Clay-Worker:

We have been fairly busy all year. Our open yard at E. Kingston was in operation the same as the last few years, viz., two-thirds of our capacity except for a month in the spring which we lost in hesitating whether to start or lay idle.

Since starting we have done as well as recent years, and although our burning was delayed for want of fuel, we are now at it with a production nearing five millions.

Our city plant did not run at all, because of general conditions.

Yours truly,
JAY TERRY.
Kingston, N. Y.

Philadelphia Brick Man Has Narrow Escape.

My Dear Mr. Randall:

I suppose you wonder why I did not meet you in Atlantic City on the fourth, but perhaps you saw the account in the papers of my accident. In driving to Atlantic City that morning my chauffeur ran the car in front of a locomotive, just this side of Hammonton. The car was totally wrecked, and the chauffeur severely injured, but fortunately I escaped by jumping.

Under the circumstances I know you will pardon me for not keeping the appointment.

Yours truly,
S. B. DOBBS.
Philadelphia, December 19, 1918.

A Tribute to W. B. Kincaid.

Dear Mr. Randall:

I am sorry not to have written you before giving you the details of the death of my friend and partner, W. B. Kincaid, which was noted in the November issue of The Clay-Worker, but the Saturday following his death I met with a very serious accident breaking my left arm and sustaining other painful injuries and so have been laid up. The doctor says I will be able to do very little business this year. My arm has been in a plaster cast for four weeks and will be in that shape for another six weeks.

Even though it has been almost two months since Mr. Kincaid's death, I can not refrain from paying him a well deserved tribute. He was one of the finest young men I have ever known. He had just passed his twenty-sixth birthday and had he lived I have no doubt would have become a very prominent man in the trade. He was born at Ewing, Va., and brought up on a farm, but went into the brick business when he left school at seventeen years of age. His whole life from that time on was wrapped up in brickmaking and brick machinery, and as you know from your personal acquaintance with him he was full of energy and the soul of good nature. He had enlisted in the Motor Transport Corps, and the Friday before he died received a telegram that he had been commissioned a First Lieutenant in that division of the service. Some way the following lines seem to have been written especially for him:

The Late W. B. Kincaid.

He, the young who cherished
Noble longings for the strife,
By the wayside fell and perished;
Stricken in the prime of life.

H. WEBSTER.
Cincinnati, Ohio.

Will Attend the N. B. M. A. Peace Convention.

My Dear Randall:

I thank you for notification of the city for holding our next convention, and if nothing unforeseen takes place, I shall certainly be on hand, as I want to attend one of the best conventions held by our Association, celebrating the cessation of hostilities in the world war.

Dear Randall, we now have, I consider, a much harder problem to solve than that of winning the war; the people of this great country have been very patriotic and have consented to contributing everything they have, if it takes that to win the war.

The war has been won gloriously by the efforts of our brave boys abroad, but now the greatest problem confronts us, in my opinion, that is, returning to normal conditions.

I fear that until the administration, together with the various business interests of this country, have solved that great problem, there will be a slack demand for building material. This is one of the times that I have become a pessimist; I am usually called the optimist of our firm.

We are all well here and with best wishes to you and yours, I am,

Yours cordially,
F. SALMEN.

A Question of Fair Compensation.

Editor The Clay-Worker:

We have just started to operate our new plant, and owing to the great changes of salaries in the last twelve or eighteen months, we are entirely at sea as to what would be fair salaries to pay men holding the following positions:

Yard foreman, who has charge of kiln setting and drawing, loading all cars and trucks, also held responsible for general yard work.

Engineer, operating 250 h. p. Corliss engine, no firing.

One man who has charge and is held responsible for shipping and receiving department, stock clerk, time keeper, and making up of payroll.

Superintendent and manager; one man fills both positions.

If any of your readers will be so kind as to assist me in getting the above salaries properly distributed, it will be very much appreciated by the writer.

We manufacture fire brick and special fire brick shapes of every description; no shape is too complicated for us to make. If it can be made from fire clay, we can make it.

Thanking you in advance for any assistance that you may render us in reference to the above, we are,

Yours very truly,
A PERPLEXED CLAYWORKER.

Brick For Ships.

Editor The Clay-Worker:

We are enclosing a clipping from a Los Angeles paper, with reference to the new type of brick manufactured by the Los Angeles Pressed Brick Co.

"Invented by a Los Angeles man and made in this city, bricks that float will be fashioned into three 3,500-ton freight ships for the government. The inventor is Gustav Larson, of the Los Angeles Pressed Brick Company. The announcement of his invention and of the orders for its use in three government ships was made by S. L. Weaver, of the Chamber of Commerce, and J. H. Hill, an attache of the war industries board here. The bricks are so buoyant that they float 40 per cent. of their bulk out of water."

These people have been experimenting for three or four months with these brick, and have just received their second order, which calls for two million brick. The brick are the size of a common paving brick, burnt to a high heat, all finished in 24 hours. They are now being burnt in a muffle kiln, burning oil as a fuel.

Yours very truly,
SCHURS OIL BURNER CO.

THE CHICAGO PERMANENT EXPOSITION.

Chicago, with characteristic spirit of enterprise, had started in before peace was in sight, to realize on a dream of 25 years' standing for a permanent exposition, and now that peace plans are in the air all around there should be a lively interest in that pretentious project. The nine-story fireproof building known as the Seigel-Cooper building, on State street between Van Buren and Congress, with a floor space of nearly 14 acres, is the home of the exposition, and the manager in charge of space sales is A. B. Hulit, with office in the east end of the building on the third floor. A big feature of the plans is in the provision and arrangements for holding conventions in the building, which will add interest to the exposition and should result in the booking of more than the usual quota of conventions at Chicago during the year.

OBITUARY.

MILWAUKEE BRICK MAN ANSWERS THE LAST CALL. DEATH OF GEORGE J. SCHWARZ.

We have been called on to chronicle an unusually large number of deaths in the ranks of the N. B. M. A. the last year, and now another is added to the list. George J. Schwarz, junior member of the firm of Ricketson & Schwarz, Milwaukee, Wis., died at his apartment in the Aberdeen Hotel, that city, November 19, after an illness of six weeks, caused by paralysis.

Mr. Schwarz had been engaged in the brick business for many years, having started with the firm of Lockwood & Kimbell, Chicago. January 1, 1893, he moved to Milwaukee, and the firm of Ricketson & Schwarz, brick dealers, was organized, and had been a compelling factor in the brick trade of the Cream City ever since. Mr. Schwarz had an unusually genial, kindly disposition that endeared him to all who had dealings with him, and his friends were numbered by the score in all parts of the country. He had been a member of the National Brick Manufacturers' Association for more than a score of years, and had been a faithful attendant. While his voice was not often heard on the floor of the convention, he was popular on the lobby talks, and will be missed at future gatherings of the craft. He is survived by two sisters.

IN MEMORIAM.

The many friends of Abel Hansen, of the Ford Porcelain Works, Trenton, N. J., will sympathize with him and wife in the loss of their son Harry, who died recently following a severe illness. The young man was in the service of his country in the navy department.

William K. Hammond, vice-president of the N. B. M. A., New York City, has added a gold star to his service flag for his son who has been at the front in France during the past year and was killed in battle toward the close of the war. The heartfelt sympathy of his host of friends in the Association and in the brick industry on the Hudson, in which he has been a leader for many years, goes out to him and his family.

The new offices of the Missouri Fire Brick Co., in the Security Building, southwest corner of Fourth and Locust Sts., St. Louis, Mo., were opened December 2. Visiting clayworkers will find a hearty welcome at all times.

It used to be that to the victor belonged the spoils, but in this enlightened day to the victor goes the privilege of administering justice, even justice tempered with mercy.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second-class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

THIRTY-FIFTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

226 East Ohio St. T. A. RANDALL & CO. [Inc.], Indianapolis.

Vol. LXX. DECEMBER, 1918. No. 6.

My Country, Right or Wrong—My Country!

CURRENT COMMENT.

Here's for a Busy Happy New Year!

* * *

Even Old Santa has been freed from restrictions.

* * *

Ring out the old restrictions! Ring in the readjustment!

* * *

Let the kiln fires be lighted and their twinkling eyes tell of the return to peaceful activity.

* * *

Fuel efficiency is a paying proposition even with the Fuel Administration going out of business.

* * *

Keep one eye on the coal market and don't be in a hurry to contract for your year's supply, for it looks a bit like fuel is coming down some.

* * *

Every business has some important assets which it is not practical to show on the books in definite figures. Among these are, reputation for quality of product, for fair dealing, for prompt delivery, etc., and it should be remembered in casting up that yearly balance that friends are an asset, while enemies are a liability.

* * *

Let us make some of the early signs of spring carry that worth-while injunction to BUILD WITH BRICK.

* * *

One pledge the brick man won't have to take with him into the new year is that one not to sell for non-essential building.

* * *

There is nothing to hold back building any longer, nor is there a scarcity of coal for burning clay, so let us rejoice and get busy.

* * *

The brick man who prepared for future work while he wasn't able to do much work will now be in shape to reap some reward for his efforts.

* * *

Let every broad-spirited man in the industry consider it his duty to be a member of the N. B. M. A., and attend the annual convention at Pittsburgh.

* * *

It should be a happy New Year from the very jump-off for the highway boosters, for the way is now clear that the good roads spirit is abroad in the land.

* * *

Missing a convention this year will be to miss more than usual for the conditions are so unusual as to make imperative an exchange of information and ideas.

* * *

There have been some big N. B. M. A. conventions heretofore, but that coming gathering at Pittsburgh promises to be the biggest and most important yet held.

* * *

Finding out what the price of brick ought to be is going to be one of the early and interesting jobs of the new year, and then will come the job of how to keep the price what it ought to be.

* * *

The industrial housing problem is still with us, but it is materially reduced in size and should turn in the direction of more permanence now that the great hurrah is over. Keep up the slogan—BUILD WITH BRICK.

* * *

Community buildings as memorials to the heroes of the war will furnish an opportunity for both architects and clay workers to develop ideas in structural design and permanence, and certainly we must lay emphasis upon the element of permanence in these buildings.

GO TO THE CONVENTION.

When a man brings his clayworking plant to what he considers about the highest degree of perfection, there is a natural disposition to stop and let it rest at that and not think much about improvement or additional progress for a while. The one trouble with this disposition is that it often leads a man into resting on his laurels too long while the wheels of progress move on beyond him without his being aware of it. That is one of the good reasons why every man should go to the convention, for there he will hear and see things that will keep him awake to the fact that progress is a continuous thing and that he must be up and doing every year or lose his place in the front line.

PEACE FINANCING.

We turn now from war financing to the finances of peace, to the obtaining and use of money for industrial activity. We are told that there will be another government bond issue to finance, but we have gotten so used to these that the chances are decidedly in favor of the final one not interfering seriously with the obtaining of capital for industrial needs. Indeed, there is evidence on all sides of much capital actively seeking a place to work in the business revival. There is more money in this country than ever before and we have money loaned abroad and a good trade balance in our favor. So the way looks bright for the financing of all industries which show promise of fair returns.

MODERN KILN WORK.

Brick burning has made such progress in this country that comparison of the product of a modern kiln with results obtained 25 or 30 years ago, furnishes some strong contrasts. The soft burned or salmon brick is practically a thing of the past and much of the common brick of today is better than face brick of earlier days. Also kiln waste has been reduced wonderfully through more scientific methods. And the work of improvement is still going on, with, properly, quite a lot of the attention of today being directed toward economy in burning and handling to and from the kilns.

GOD'S COUNTRY.

What son of Uncle Sam is there who is not now awakening to the fact that this is God's Country, and expanding in the chest with the fullness of the realization that the domain known as the United States constitutes the greatest country on earth, which today is being recognized and accepted as a fact the world around and not merely considered as a bluff? We now possess about a third of all the wealth of the world and hold a dominant position of which we can all feel proud. Nothing is more impressive of this than the fact that our boys with the colors who have seen and admired other parts of the world are so keen now to return to the Homeland. We are learning to appreciate the blessings we have and will be inspired thereby to further improvement and greater accomplishments. Thus we find good coming even from the evils of war.

THE RAILROAD QUESTION.

One of the uppermost questions in the public mind today is that of the railroads and what to do with them now that the war is over. It is a question upon which congress and politicians are slow to express themselves and for once even the President has hedged in making answer. Evidently congress is waiting to hear from home and wondering some just what course will appeal most to the voters of the country. Meantime the railway employes, those who have benefited from advance pay under government management and war conditions, are getting themselves on record as favoring government ownership. But a different sentiment is found among the shippers and the traveling public, and also among bankers and those who own railway stock. There is a feeling that we should have a better arrangement than that which existed at the time the government took over the management, but government ownership and management does not appeal as the way to improvement. Private ownership and better control is the substance of the answer that will appeal to the business world.

EARMARKS OF HOME.

There are two outstanding earmarks which characterize the real home when the homing instinct has full play and room to get in its work. One is the garden, which grows in the summer, and the other is the fireplace, which comes into its own in the winter. We hope that the gardening spirit will stay with us for the sake of the air it gives the home, and that this winter will bring the fireplace into wider use and enough deeper favor that the building season next year will include in the program of home building more good brick fireplaces.

HOW ABOUT A BUILDING CAMPAIGN?

Before the war came along to disrupt plans and turn the world topsy-turvy, there had been inaugurated the idea of a better-homes week, an idea started by the furniture people that the war seems to have shelved. The idea was to set apart the first week in April as a campaign week for home building and home improvement. This idea was good, and now is a good time to take up something of the kind actively. How about having a building campaign—organizing for it and making it a country-wide effort put forth in unison and pushed with enthusiasm?

BUILDING AND FUEL RESTRICTIONS OFF.

All restrictions on building operations have been removed, and both the War Industries Board and the Fuel Administration are on the retired list, so the way is clear for a full and free resumption of business all around. In the building world the darkest day was just before the dawn of peace, the operations having fallen to below half normal even with the activity at the congested industrial centers. In a word building operations other than those connected with war work had practically stopped, and had for some time previous to that been going at very slow speed. This should mean that we are behind in our building program far enough to make for an unusually busy time during the next few years, which in turn should mean a great day ahead for the clay working industry, for with proper exploitation there should be in the future a larger percentage of brick building than we have had in the past.

THE MACHINERY OUTLOOK.

The outlook for the brick machinery trade looks good both at home and abroad. As a part of the needs for reconstruction in Europe there should be an immediate demand especially for clay machinery that will save labor and increase production. The field of possibilities and prospects in the foreign trade has been reviewed at some length in The Clay-Worker during the past few months, and now the time has come for action, for the machinery people to be realizing on this trade. Meantime, peace has brought bright prospects to the home trade, which is the main thing after all. Never before has the way looked brighter for big things in the clayworking industry, and if this means anything it means busy times in machinery and equipment with which to improve and enlarge plants. It is a time for the machinery men to be about the business of telling the trade what they have to offer that will help out and to be getting in touch all around for the business that is in prospect.

WHEN PRICES DECLINE

There is an old saw about all that goes up must come down which may well be brought into contemplative use right now. Prices have been going up all around, and now we are facing the fact that the conditions which brought this about are reversed, so logically we are due for some declines. Commenting upon this matter, National City Bank, of New York, says: "It is inevitable that prices will be upon a declining scale and this will be the factor of uncertainty and danger in the situation. Falling prices, shrinking values in inventories, stocks of goods and capital investments, have a depressing influence. * * * The millions of men withdrawn from industry will be returned to it, and the millions of women who have entered industry will not all leave it." To sum it all up in a few words, we will have to face a readjustment just as we had to face the adjustment to war conditions, with the difference that values all around will be tending to decline instead of advance. It is plainly a time calling for just as earnest co-operation and team work as has been manifested in the line up to help win the war. We must now line up for industrial victory.

THE J. D. FATE COMPANY'S NEW CATALOGUE.

A most timely catalogue has recently been issued by the J. D. Fate Co., Plymouth, Ohio. This catalogue in which their extensive line of clayworking machinery is illustrated and described, is in the form of a convenient loose leaf book or holder, which can be added to, as occasions require. It comprises their Bulletins No. 1 to 8 inclusive, covering auger machines, pug mills, clay feeders, automatic clay cutters, crushers, disintegrators and dry pans, elevators and conveyors, winding drums, turn tables and cars, trucks and barrows. From time to time additional bulletins will be issued so the catalogue will be kept up-to-date and make a handy reference book for clayworkers generally. A copy of the catalogue may be had by addressing the J. D. Fate Company, Plymouth, Ohio.

AN ARGUMENT FOR THE HOME.

One of the good arguments of the day in connection with home building is that a cheap home makes a cheap man, and poor housing makes poor citizens, both morally and materially. This is a good argument to keep in mind and make use of in promoting the use of clay products for home buildings, whether the home be in the city or on the farm. Where you find the best of homes there you find also the best of men, and since the best of all building material is burned clay the connection is easy to make and to hold.

"The Road is Clear! Go Ahead, Full Steam!"

Table of Contents

Pittsburgh the Convention City 491
The Call to Business.......494
Burning Clay Wares.......496
Uncle Sam Will Take Care of His Boys............498
The Hollow Brick Industry.499
The Private Sewage Question 500
Sanitary Conveniences and Comforts for Country Homes 501
Practical Suggestions About Drainage 503
Classification of Refractories.504
Structural Ornamentation...506
The Future of Common Brick 507
Meeting of Refractory Interests 509
Big Week for Highway Improvement Boosters 510
Brotherhood 511
The Atlantic City Conference 511
Tractors as Drainage Factors 511
Something New in Steam Shovels 512
Drainage Congress Holds Important Meetings 513
N. B. M. A. Offificial Announcement 514
American Road Builders to Meet in New York........515
Ceramists of Northern Ohio Hold Meeting 515
Milwaukee Brick Man Answers Last Call..........517
In Memoriam 517
Paving Brick from Blast Furnace Slag 548
Davis Brown Joins Fate Forces 548

CORRESPONDENCE:

New York and Vicinity.....493
Pacific Coast News 498
Evansville Brick and Buildings News 508
In the Market for Brick Machinery and Appliances...516
Wisconsin Clayworkers to Meet in January 516
What Is a Fair Royalty for a Brick Plant 516
Hudson River Brick Man Satisfied 516
Philadelphia Brick Man Has Narrow Escape 516
A Tribute to W. B. Kincaid.516
Will Attend N. B. M. A. Peace Convention 516
A Question of Fair Compensation 517
Brick for Ships 517
Brick News from the Twin Cities 548
The Chicago Situation 552
Seen in New Jersey.........554
Among Philadelphia Brick Plants 556

EDITORIAL:

Current Comment 542
Go to the Convention.......542
Peace Financing 542
Modern Kiln Work.........543
God's Country 543
The Railroad Question......543
Earmarks of Home.........543
Building and Fuel Restrictions Off 543
The Machinery Outlook.....543
When Prices Decline.......544
Editorial Notes and Clippings 547

MISCELLANY.

Uniform Cost Accounting...493
Peace Time Plans..........493
Brick Porches 495
The Nigger in the Alley....503
The Needs of the Day.......508
Marriages and Homes......509

INDEX TO ADVERTISEMENTS ON PAGE 560

WITH THE CINCINNATI BRICK AND BUILDING MEN.

Work on the new clubhouse at the Zoo, which was held up on account of the war, and the Dixie Terminal building at Fourth and Walnut streets, will doubtless be started soon. Both are large buildings.

W. H. Dwyer, a general contractor of this city has a contract for the building of a $200,000 engine shop for the B. & O. R. R., at Keyser, W. Va., the contract also including a resthouse and five dwellings.

Botwin and Tunick, builders, have let contracts for the building of three brick bungalows on Eighth street.

The Pennsylvania system is expected to soon let the contracts for the construction of freight terminals at Gilbert avenue and Court street, for the Cincinnati, Northern & Lebanon railroad.

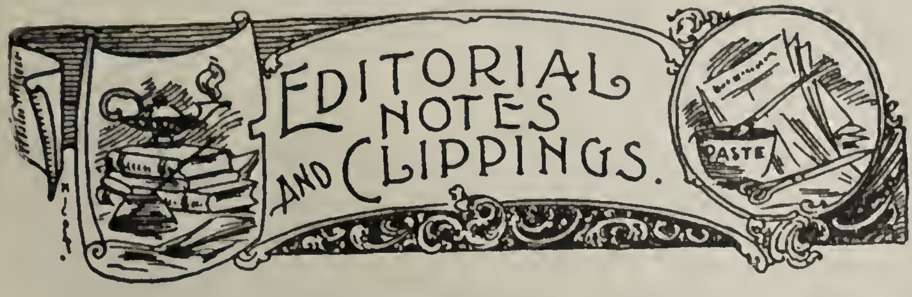
The Non-War Building Commission has held its final meeting, and expects to be very shortly disbanded.

William W. Franklin, senior member of the firm of William Franklin & Son, architects, died of influenza some days ago. He was 70 years old and leaves a son and daughter.

E. F. Grand, of the Pursell-Grand Co., face brick dealers, who was an interpreter for the High French Mission in the United States during the war, is now back at his usual place of business.

The Builders' Exchange, which decided some time ago to suspend operations until the termination of the war, held a meeting here several days ago and will on January 1 resume its old quarters at 614 Race street. The furnishings were left in the building, a lease being held by the Exchange, and the renewal of the labors of the organization, with the same officers, will not demand any great change. This will be a help toward making the building situation here more promising for the coming year.

CINCY.



EDITORIAL NOTES AND CLIPPINGS.

The plant of the Brush-McCoy Pottery Company, Zanesville, Ohio, recently suffered heavy loss by fire.

Lieut. Harry A. Stevens, a salesman for the Trenton (N. J.) Pottery Company, prior to his enlistment, was killed in action in France October 3.

The Grafton Clay Products Company has been incorporated with $30,000 capital stock. R. B. Johnson, Charles S. Eggeman and Wm. E. Steele are interested.

James Stanbarger, assistant superintendent of the Dover Fire Brick Company, Dover, Ohio, has resigned and Oscar Haswell has been appointed to fill the vacancy.

Mr. Miller, of the Fiber Fire Brick Works, of Fiber, Mo., was in Chicago a few weeks ago showing samples of his brick burned in the tunnel kiln. He had some mighty fine looking fire brick.

Mr. A. P. Green, of the A. P. Green Fire Brick Co., spent three days in Chicago working on his sales organization. Mr. Green has a large plant at Mexico, Mo., and is getting ready for the reconstruction period.

A voluntary petition in bankruptcy has been filed by the Wilkesbarre and Hazleton Brick Co., of Hazleton, Pa., stating that the company owes $44,250 and has assets valued at $21,733. Jos. G. Schuler is president of the company.

Thomas-Wetherill Tile and Brick Company, Rosenhayn, Cumberland county, N. J., has been incorporated to manufacture and deal in brick, tile, etc.; capital, $50,000; incorporators, D. W. Thomas, of Rosenhayn, and Lee R. Wetherill and Henry Vaniver, of Philadelphia.

H. C. Kleymeyer, of the Standard Brick Mfg. Co., of Evansville, Ind., was in Chicago recently visiting one of the modern yards and looking at the improvements in brick dryers. He figures on getting his dryers in shape on one of his plants to match up with the balance of his equipment.

The Purington Paving Brick Company, Galesburgh, Ill., anticipate an unusual speeding up in their production in order to meet the demand for pavers that is sure to come with the beginning of spring. Illinois will spend $60,000,000 on hard roads the coming year, and a goodly portion of it will go into brick roads. That being the case, trust the Purington Company to get its full share of the business.

A village of 100 brick dwelling houses, a dormitory to accommodate 50 men, a cafeteria, general store and children's playground, all of brick and tile, are being constructed at Naaman's, near Marcus Hook, as part of an industrial village which the National Aniline and Chemical Company, Inc., Philadelphia, Pa., is building for its Marcus Hook employes. The houses are of English design and vary in color. The cost of each house ranges from $3,000 to more than $3,500.

The American Bisque Doll Co., of West Berkeley, Oakland, Cal., while only established six months ago, has made a place for itself in American industries. Irving Jones, the manager, is an experienced pottery manufacturer, which fact has been an important factor in the success of the enterprise. The factory now has representatives in different sections of the country and is on the road to establishing a trade that will successfully replace that formerly controlled by the German manufacturers.

The machine shop of the Southern Sewer Pipe Co., Birmingham, Ala., which was destroyed by fire some time since will be rebuilt at once. Mr. C. B. Beasley is manager.

The Miami Tile Co., of Miami, Fla., has been incorporated, and the following officers of the company announced: Andrew C. Jensen, president; H. I. Homa, secretary, and M. C. Kilgore, treasurer.

Three suits which had been brought against the Ohio Clay Products Co., of Salineville, Ohio, asking for damages to nearby property from the smoke from the kilns, have been dismissed by the court.

At a recent meeting of the Builders and Traders Exchange of Grand Rapids, Mich., N. H. Barr, manager of the Michigan Face Brick Co., made an interesting talk on brick, which was listened to with keen interest by the members present.

The capital stock of the Salveson Face Brick Company, of Petersburg, Ill., has been increased from $35,000 to $60,000. The plant will be enlarged to meet the demand for their product. The company is now burning their brick with producer gas and are well pleased with the system.

If any of our readers are looking for second-hand machinery or appliances, they will do well to scan the ads in our classified department this month. The same is true of those looking for competent help, for we have unusually attractive propositions set forth this month in the Wanted and For Sale ads.

W. E. Dunwody, of the Standard Brick Co., Macon, Ga., is mourning the loss of his Hudson Limousine, which was stolen November 8th. Notwithstanding the fact that Mr. Dunwody has advertised widely for the car and offered $100 reward for recovery of the car or information leading to its recovery, he has heard nothing of it.

Gustaf Larson, of the Los Angeles Pressed Brick Company, has invented a new brick for use in the building of ships. The brick is made out of a clay in combination with a substance that enables it to float. The Los Angeles company had a contract with the government for furnishing brick to the Emergency Fleet Corporation sufficient for building three ships.

The Barber-Greene Company, Aurora, Ill., announces the strengthening of its organization by the addition to its forces of Mr. F. E. Smith, chief engineer, formerly with the Stephens-Adamson Mfg. Co., the Granby Mining & Smelting Co., and the American Zinc & Chemical Co. Mr. George C. Sanford, formerly associated with the Elevator Supplies Co., and of the Otis Elevator Co., has been secured as superintendent.

A milestone in the pottery industry in this country was the establishment in 1917 at East Liverpool, O., by Ernst Reinhardt, of the Bisc Novelty Company's pottery, for making bisque doll heads. Since the imports of toys from Germany have been cut, all efforts have been made, with more or less success, to produce dolls and doll heads of various materials, but it remained for Mr. Reinhardt, formerly connected with the doll-head making industry in Germany, to produce bisque doll heads on a commercial scale in the United States. Mr. Reinhardt started his work in a small way in Philadelphia soon after the war began, and in 1917 he removed to East Liverpool, O., where, if his plans are carried out, bisque doll heads will be made in large quantities.

S. N. Johnson, of Laredo, Texas, was a visitor in Chicago on his way home from Rochester, Minn. Mr. Johnson was at Mayo's Hospital having passed through a very serious operation, and they fixed him up all right. Mr. Johnson has two

(Continued on page 550.)

Written for The Clay-Worker.

BRICK NEWS FROM THE TWIN CITIES AND THE NORTHWEST.

NO LINE OF BUSINESS men rejoiced more completely over the armistice and all it meant to business, than those engaged in the building and materials line. For a year, the business has been under government discouragement to such an extent as to nearly shut down completely. Despite the discouragement, there was a moderate volume of small work which went ahead, but it was confined to small work. Other sections had a little large work of construction connected with war contracts. But the Northwest had very little war business. In Minnesota and the Dakotas, there was not a cantonment. The military forts had practically nothing in the way of improvements. There was an occasional factory which had war contracts sufficient to allow a little enlarging, but the volume of business so contracted was very small indeed.

As a result, the Northwest has millions of dollars worth of work held back. Much of it never was even considered and so did not appear on the lists of appeals for permission to build. Since the war industries board committee had a severe sense of need to hold down to the minimum, it is as well that applications were not made. They stood as much chance of being granted as the ex-kaiser has of dominating the peace conference.

Now that all restrictions are off, it is too late in the season to allow much work to get started before spring. However, it is in time to allow architects the opportunity to complete plans and get preliminaries out of the way before spring, and indications are that this will be done to some extent. Unfortunately, owners so far do not realize that architects have had their organizations scattered and so will require more time than usual to get out plans.

Stocks of brick and other material are uncertain. There are moderate quantities of common brick in the Northwest. Face brick has been somewhat uncertain in supply. Some are in fair supply and others are not, which may have some bearing when an owner is anxious to build and is decided upon a certain shade of face brick.

Prices on brick are high—though not more so than the unusual costs of everything justify. Coal is more than double any normal price of the past. Labor is scarce and high. Oils and other supplies have gone high. As a result, common brick has been held at around $14 in the market of Minneapolis and St. Paul—a price about double what they were only a few years ago. This and other high costs will have a tendency to discourage building until owners become convinced that they cannot hope for lower prices. When they become convinced that prices will be maintained, the erection of many buildings will turn upon the urgency of the need. Buildings built for investment, upon which the margin of profit turns on a narrow figure, will probably be held back, since the additional cost, even spread over a number of years, might wipe out the narrow profit. On the other hand, businesses which have been handicapped for lack of room and have been unable to expand, will probably go ahead, since the loss of business will probably more than offset the increase of cost against any probable decline in values within the next five years.

As there is a determined effort to maintain wages at the present scale for some time to come, and as railroad freights seem to be on a higher plane for some time, the chances seem to be in favor of comparatively little reduction in material prices.

C. H. Klein, the Chaska, Minn., brick manufacturer, was the representative for the brick industry on the trades board, from the Northwest.

A fine building which promises to go ahead in the early spring is a large office building in Minneapolis for the Northwestern Telephone Exchange Co. It has been under consideration for many months, and has been hung up for lack of government approval for almost a year. Now it is expected to go ahead after the new year. It will be about eleven stories, of steel frame and pressed brick construction.

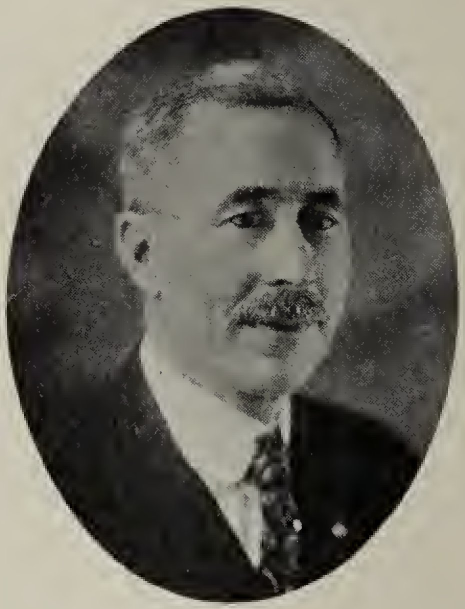
One large building which is under way in the Twin Cities is the Miller Hospital in St. Paul, being constructed by the George J. Grant Construction Co. It will cost $500,000. The walls will be of pressed brick.

The St. Paul union depot, which has been hanging fire for years, and was finally started a year or so ago, and held up by the war, is also going ahead. The foundations are well along. The building will be of cut stone, but there will be a large quantity of brick in the structure.

The Northern Pacific Benefit Association, an organization to maintain hospitals in connection with the needs of railroad men working for the road of that name, is about to erect a fine hospital in the outskirts of St. Paul, of brick construction, to cost several hundred thousand dollars. T. WIN.

DAVIS BROWN JOINS THE J. D. FATE COMPANY FORCE.

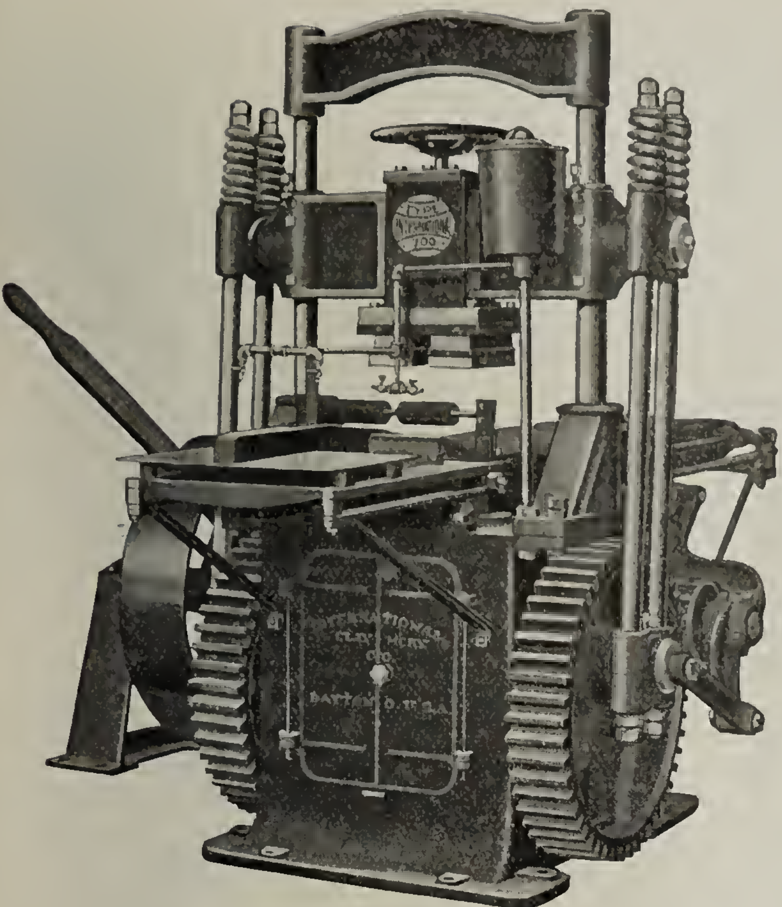
Nearly every manufacturer of clay products who has been in the business for twenty years or more is acquainted with Davis Brown, who has attended many clayworkers' conventions and been identified with the trade generally for a score or more of years. Many of the practical appliances or devices seen in the average brick plant today is the result of the mechanical and inventive genius of Mr. Davis Brown, who has recently joined the forces of the J. D. Fate Company, Plymouth, Ohio. We congratulate the firm upon the acquisition of such a man to their staff of capable engineers, for we feel sure he will render them and the users of the Fate machinery valuable service.



Davis Brown, Plymouth, Ohio.

The Fords Porcelain Works, Perth Amboy, N. J., of which our genial friend, Abel Hansen, is the general manager, is looking forward to an unusually busy season. In common with all other clayworking firms, they were forced to curtail their output during the period of the war, but they are now getting both their plants in order for a steady production.

An important development in the pottery industry of the United States is the production of chemical porcelain, the manufacture of which in this country was considered impossible before the war. Several operators are now making chemical porcelain, which satisfactorily meets the exacting requirements of the laboratory.



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OUR SPLENDIDLY EQUIPPED

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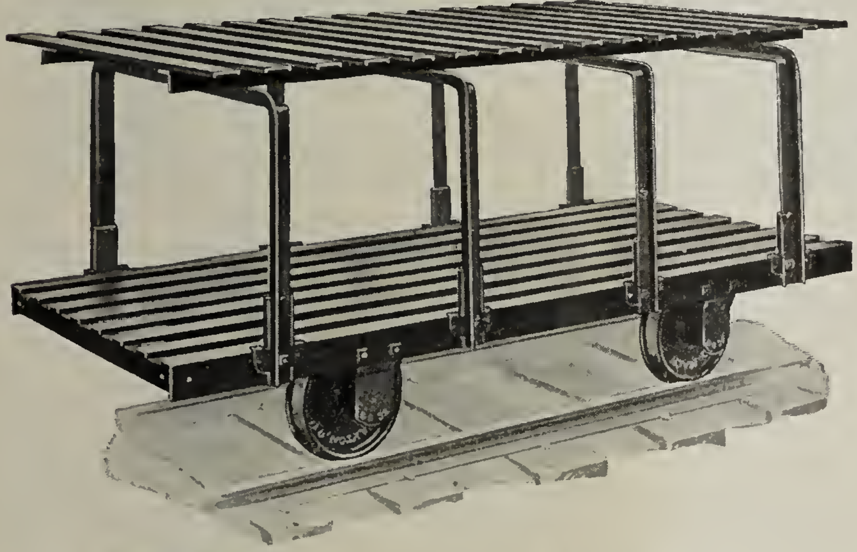
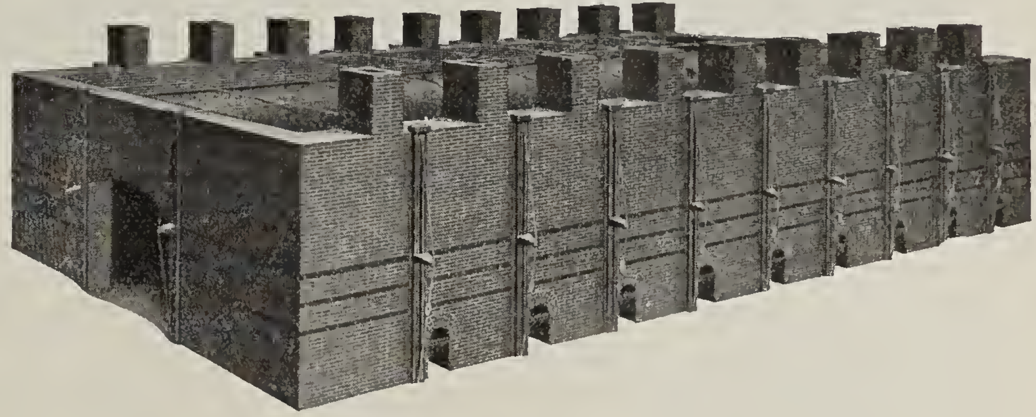
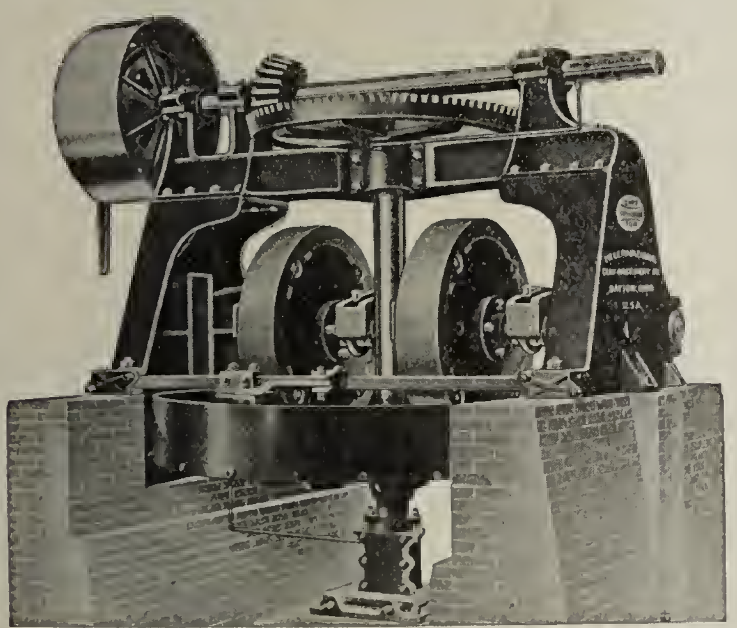






TYPE 100 PAN

CLAYWORKING MACHINERY
DRYERS and KILNS
also
GAS PRODUCERS and BURNERS
for
your present Kilns

International Clay Machinery Co.

DAYTON, OHIO

Mention The Clay-Worker.

EDITORIAL NOTES AND CLIPPINGS—Continued.

plants in Laredo, one making four thousand soft mud brick per day, and one making twenty thousand dry press.

The Mason City (Iowa) Brick & Tile Company offices have been moved from Eighth St. to the Times Building. The entire first floor is devoted to the offices of the company including that of president, secretary, general sales department, traffic, accounting and purchasing departments. The basement is devoted to display rooms and some very attractive displays have been arranged.

With the close of the war, the American Enameled Brick & Tile Co., of New York, which had been making fire brick at the plant at South River, N. J., for government use, has turned its production largely to enameled brick, on which they have built up their reputation, and an enviable one at that. Orders are coming in steadily and they will soon be back to "before the war" activities.

James B. Hammond, for many years one of the prominent fire brick manufacturers of Pennsylvania, with plant at Bolivar, died at his winter home in Rome, Ga., early in November. Mr. Hammond was fifty-two years old and had been ill for some months. Previous to his illness he had been prominent in the politics not only of his own town, but of the state, having served two terms in the state legislature. His wife and three children survive.

The old brick plant of Ferd Eggers at Valley Road and Jennings Ave., Cleveland, is to be rejuvenated and one of the largest brick plants in Ohio will be established there. Henry H. Camp, president of the Camp Conduitt Co., which has been manufacturing tile and hollow ware on a large scale, recently gave out the statement that the Eggers plant, which was taken over by his company a year or more ago and which had remained closed owing to the restrictions made necessary by the war, would at once be remodeled and brought up to date with all necessary machinery and appliances for turning out a high grade shale brick in large quantities. The company is now running two large plants exclusively on tile and hollow ware, fireproofing, etc.

John F. McKay, sales manager of the Hydraulic Pressed Brick Company, of Cleveland, Ohio, had an interesting experience trying to get into the army, but as he tipped the scales at 220 they would not take him into the infantry, so he tried the navy with the same result; then he tried the aviation division hoping to get into aerial photography, but there was also a weight limit in that department. Next he discovered that the Y. M. C. A. wanted truck drivers, made application and was accepted much to his gratification. There was much delay in getting his passports but they were finally received September 11, and the next day the army took over the transportation department of the Red Cross, but it had eliminated the physical examination. so Mr. McKay became a lieutenant in the transport division of the U. S. Army and sailed for France, arriving in Paris the day the armistice was signed. Tough luck for a man who had spent more than a year trying to get into the army to get a whack at the Huns. Now he is ready to devote his energies to getting out of the army and back into the brick game. Success to him.

DICKEY REPRESENTS CLAY PRODUCTS.

In the election of officers and directors at that great meeting of the Chamber of Commerce of the United States at Atlantic City, W. S. Dickey, of Kansas City, was elected as a director for three years, representing the clay products industry.

Care of Belting.

And don't forget the belts. Belting is belting these times, and whether they be of leather, rubber or canvas, the new ones come high, and the leather ones may be hard to get. Anyway, no matter how many new belts the occasion requires, look after the old ones you are going to use again. Take them off where practical and get them all into a shop where you can work in comfort and have the facilities for doing the work right. Clean first, and clean thoroughly. Then repair. Soak the oil out of flabby belts with dry dust of some kind, which is to be scraped off and renewed till the flabbiness is removed. This applies more especially to leather belts. Rubber and canvas belts are generally cleaned by scraping and possibly a little washing. Then when dry the canvas or composition belt may be treated to a dressing. Ask your belting supply man about it if you do not know just what to use. Then finally provide for the proper joining of such belts as cannot well be made endless. The old lace string has in the main given way to metallic fastenings. If you are not already familiar with them get in touch and be prepared.

FOR SALE AND WANTED.

WANTED.

Four Mold Dry Press, Boyd or Berg preferred; 9 ft. dry pan; lot of dryer cars; also flat steel pallets. Address,
12 1 c 'C. H., care Clay-Worker.

FOR SALE.

7,000 ft. of 1½-in. crucible steel haulage rope. Immediate shipment. National Products Co., East Liverpool, O.

FOR SALE.

An up-to-date tile plant, twelve tunnel hot air dryer, all new machinery; two new kilns, sale of ware guaranteed
Address, CHAT,
12 1 cm Care of Clay-Worker.

WANTED.

1,500 to 2,000 iron pallets 10 by 34 in. with or without legs. Address,
WYOMING VALLEY BRICK CO.,
12 1 dm Wilkes-Barre, Pa.

AGENCIES WANTED.

Established building specialties sales organization in Cleveland desires to enter into sales agreement with manufacturers of brick, tile and terra cotta. Reply in detail.
CLEVELAND,
Care Clay-Worker.

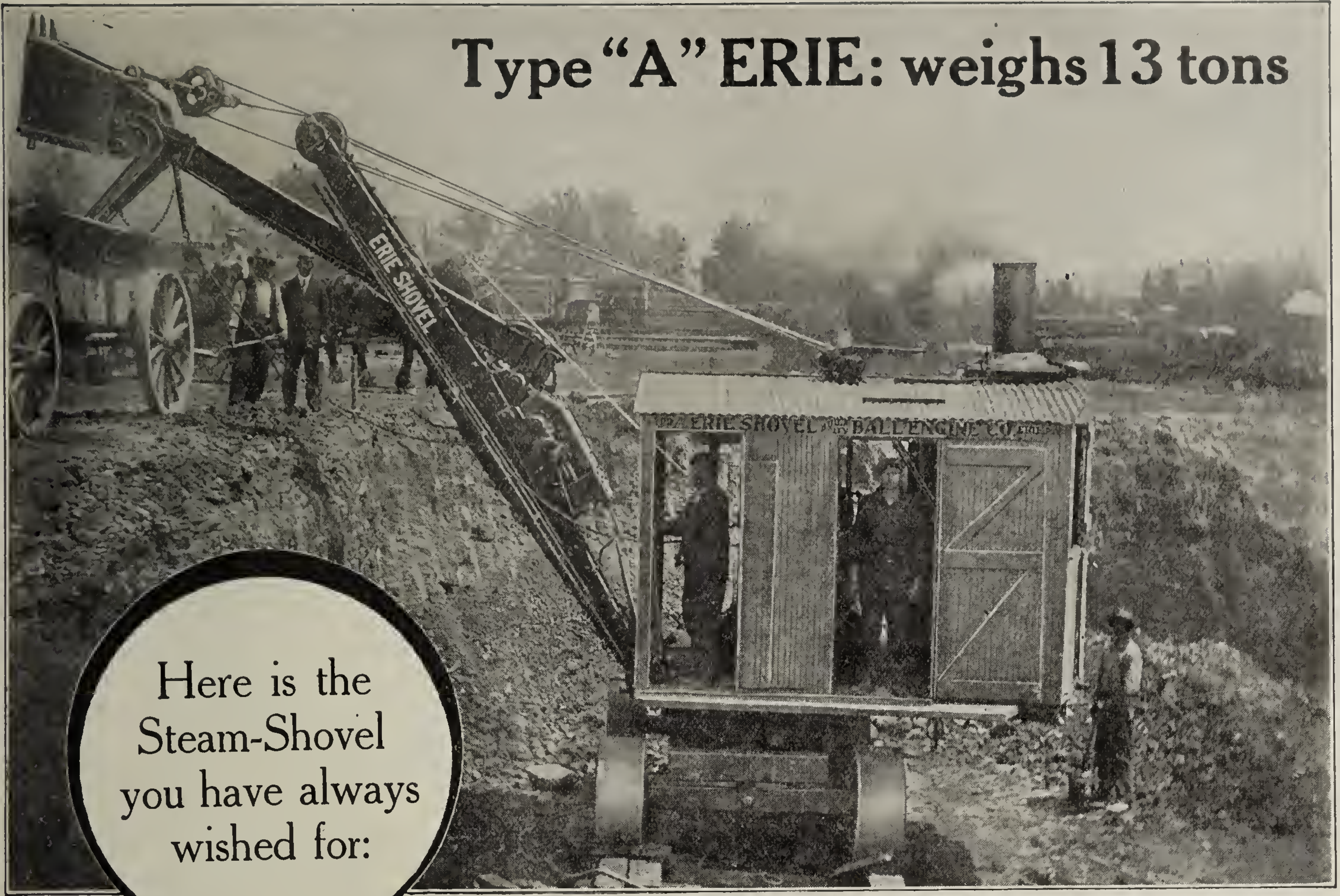
WANTED.

A good reliable fire brick burner, one who understands thoroughly the burning of fire clay products, and can take entire charge of the burning. Address,
BURNER,
12 1 d Care Clay-Worker.

FOR SALE.

Well established brick plant located in Bogota, Colombia. Ricardo Calvo, R., after 44 continuous years in the business, owing to advanced age, offers his modern and up-to-date brick plant for sale. Brick in this country sell from $12 for common, to $45 for hollow block. Chambers machines, almost new, and other machinery fitted for the manufacture of paving brick, hollow and roofing tile, etc. Inexhaustible supply of clays. Good houses for working men and fine dwelling for superintendent. If interested write for further details to the Clay-Worker, or

RICARDO CALVO, R.,
Apartado 273, Bogota, Colombia,
12 1 d South America.



Type "A" ERIE: weighs 13 tons

Here is the
Steam-Shovel
you have always
wished for:

Light weight—but a long reach and

PLENTY OF STRENGTH AND POWER

Type "A" ERIE Shovel

DIPPER CAPACITY, ½ CU. YD. 3 dippers fill a 1½ cu. yd. wagon or car. 4 dippers fill a 2-yd. car.

RATED CAPACITY, 30 to 40 cu. yd. per hour. (Type "A" ½-yd. ERIES have often exceeded this rated capacity.)

EXCAVATES 28 FT. 4 IN. WIDE at floor level, with boom at 47½ deg. (wider cut if boom is lower).

EXCAVATES 46 FT. 4 IN. WIDE at 8 ft. height, with boom at 47½ deg. (wider if boom is lower).

DUMPS 13 FEET ABOVE FLOOR LEVEL, with boom at 47½ deg. Higher dump if boom is raised.

BOOM HOIST. Quickly raises or lowers the boom to the most effective digging angle.

THREE-LEVER CONTROL, same as the Type "B" ¾-yd. ERIE.

FULL REVOLVING — will turn a complete circle.

TWO-SPEED TRAVELING GEAR, giving an average speed of 1 to 2 miles per hour on low speed, and 2 to 3 miles per hour on high.

IMPROVED POWER STEERING, using the same principle which has been so successful on the Type "B" ¾-yd. ERIE.

TRACTION WHEELS OR CAR WHEELS, interchangeable on the same truck frame.

A real steam-shovel—but weighs only 13 tons in working trim! Light enough to move around in the pit easily and quickly—

But **powerful** enough to dig stiff clays or the lighter shales, without blasting.

The above photo shows a 13-ton "A" ERIE digging very stiff blue clay, and going right up through it.

See the long high reach. This "A" ERIE is dumping clay 11 ft. above the floor of the pit. The "A" cuts right up to the top of a high bank of clay, mixing the clay from the different strata. There is no need to have a man up on the bank to cave down material.

Here is the ideal machine for excavating the brickmaker's clay or shale.

Type "A" ½-yd. ERIE Shovel

It excavates enough material for a daily capacity of 100,000 brick, or even more.

It works steadily—in fact is absolutely dependable. Built as well as our ¾-yd. Type "B" ERIE, of which there are 600 in service. The ½-yd. "A" is lighter, but weight considered, is fully as good an excavator as the ¾-yd. "B." We need not say more to any of the brickmakers who are using the "B" ERIE!

½-yd. "A" ERIES are giving excellent service excavating clay for brickyards. The first "A" ERIE has worked steadily for a year and a half, digging frozen clay last winter with the thermometer at 20° below zero. In 18 months of hard digging this machine has cost practically nothing for repairs.

You will be delighted with the ½-yd. "A" ERIE because of the saving in initial investment, and savings in fuel expense and operating costs.

Let us tell you just what the ½-yd. "A" ERIE is, and what it will do. Let us tell you where you can see one at work in your neighborhood. Write for our new Bulletin W-A. Address:

BALL ENGINE CO., Erie, Pa.

Builders of ERIE Steam Shovels and Cranes; BALL Engines.

ERIE Revolving Shovels

BALL Engine Co. Erie, Pa.

Written for The Clay-Worker.

THE CHICAGO SITUATION.

THE BUILDING MARKET has not been revolutionized as yet, even if the armistice is about a month old at this writing. Nevertheless, although the number of permits continues to fall below that for corresponding weeks of 1917, there is every indication of a real revival early in the coming year and for that all are thankful. The latter part of last month it was announced by the Non-War Construction Bureau of the State Council of Defense that permits for $10,000 worth of construction were issued within three days. The Building Commissioner predicts a banner year for building.

All this makes the brick and clay products man as glad as the next fellow, but the manufacturers especially probably cannot help putting up a little prayer on their own account that the Lord and the powers that be will temper the winter and the fuel regulations just a bit to a bunch of already much-shorn lambs. They have been uncomplainingly loyal and will continue to go the limit, but with the dawn of peace beginning to break in the East they would not object to enjoying the benefits of a little relaxation of the war-time strain and pressure. They will gladly make any sacrifices to save fuel for any worthy purpose, but if—for a concrete example—fuel is to be saved to keep Bill Hohenzollern warm, they would just as soon see that job turned over to his Satanic Majesty.

Among the Chicago jobs that have been delayed by the war:

Union Passenger Station	$10,000,000
Twelfth Street Station	5,000,000
Chicago & Northwestern freight and produce terminal	3,000,000
New Board of Trade	4,000,000
New Stratford Hotel	4,000,000
Methodist Church Block	2,000,000
Blackstone Hotel Addition	1,500,000
Congress Hotel Addition	1,500,000
Bunte Brothers Factory	1,500,000
Augustana Hospital	1,500,000

In addition there has been talk of new construction work for the People's Gas Light & Coke Company approximating $15,000,000 in estimated cost. In South Chicago alone, it is said, that the entry of the United States into war tied up about $25,000,000 in industrial additions and new plants, while business buildings of an estimated value of at least $1,000,000 were halted. This work probably will soon be going ahead. A permit already has been obtained by the Wisconsin Steel Company, the steel making branch of the International Harvester Company, for a number of batteries of coke ovens to cost in the neighborhood of $5,000,000. Considerable auxiliary construction will be necessitated in connection with the building of these ovens.

Armour & Company is removing its fertilizer works to Chicago Heights, which will involve the construction of a $500,000 plant out there.

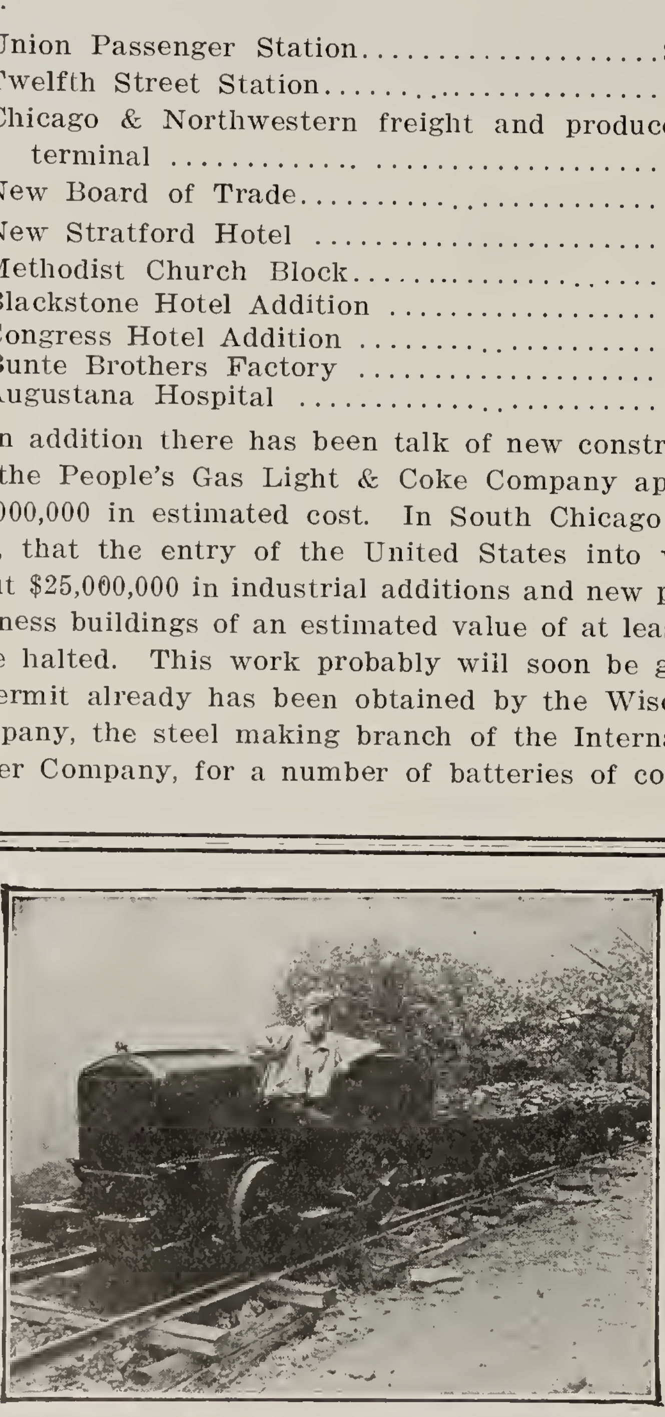
As yet there is comparatively little activity in plans for residence and especially for apartment house construction. That probably will wait to a large extent until the peace terms finally are settled, and the expeditionary forces brought back to take their places once more in industrial and domestic life.

One of the biggest downtown jobs of the future will be one in which Uncle Sam will be the principal interested party. That is to be the construction of a Federal Reserve Bank building with suitable accommodations for carrying on the extensive business of the Seventh Federal Reserve District, of which Chicago is the banking headquarters. The announcement that such a building is to be built has not actually been made, it is true, but the fact that through the consummation of one of the biggest real estate deals in the history of Chicago between John G. Shedd, president of Marshall Field & Company, and reserve bank officials, the reserve bank has come into possession of extensive property on the west side of LaSalle street running from Quincy street south to Jackson boulevard would seem to insure the bank a much-needed headquarters. A number of leases in buildings now occupying this property must expire, however, before the work of construction of the new building can begin, and in addition the reserve bank officials are said to be desirous of holding the making of contracts until the cost of materials has been considerably reduced.

"Speaking of the cost of building materials and the drop therein which many people appear to be looking for," said a well known brick man the other day, "whenever people get to talking in that strain the first thing they mention is brick. Yet brick was longer in going up, and the amount of money put into brick in most jobs as compared with that put into other material, rarely would cover the difference between the high bid and the low one for the whole job. Brick in all of the many forms in which it is used is essential to good building, and yet its cost, even at present prices is insignificant when compared with the cost of the whole contract. Prospective owners and builders should bear this in mind and remember that something beside brick will have to come down if construction costs are to be materially lighter than they are at the present time."

SCRIP.

In the great readjustment it is being found that industry is pretty well able to take care of itself and is not anxious either for congressional action or other governmental direction.



Leathers' Mine Moters

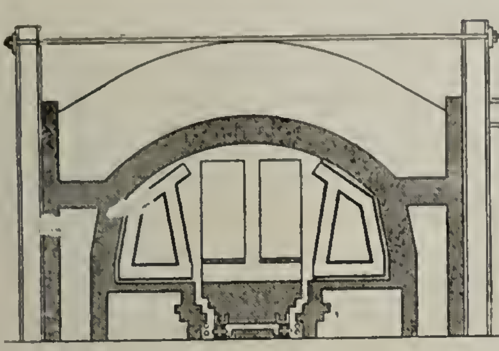
Especialy adapted for outside hauls. So simple and so efficient as to be almost unbelievable.

Will replace four mules and operate on five gallons of gasoline per day.

Suitable for Coal and Clay Mines, Limestone Quarries, Brick and Tile Plants, Road Building, etc.

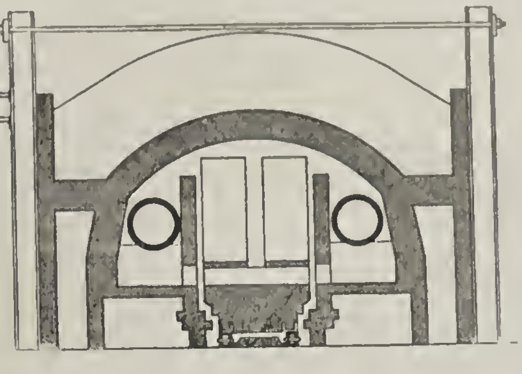
Write today for prices and full descriptive matter.

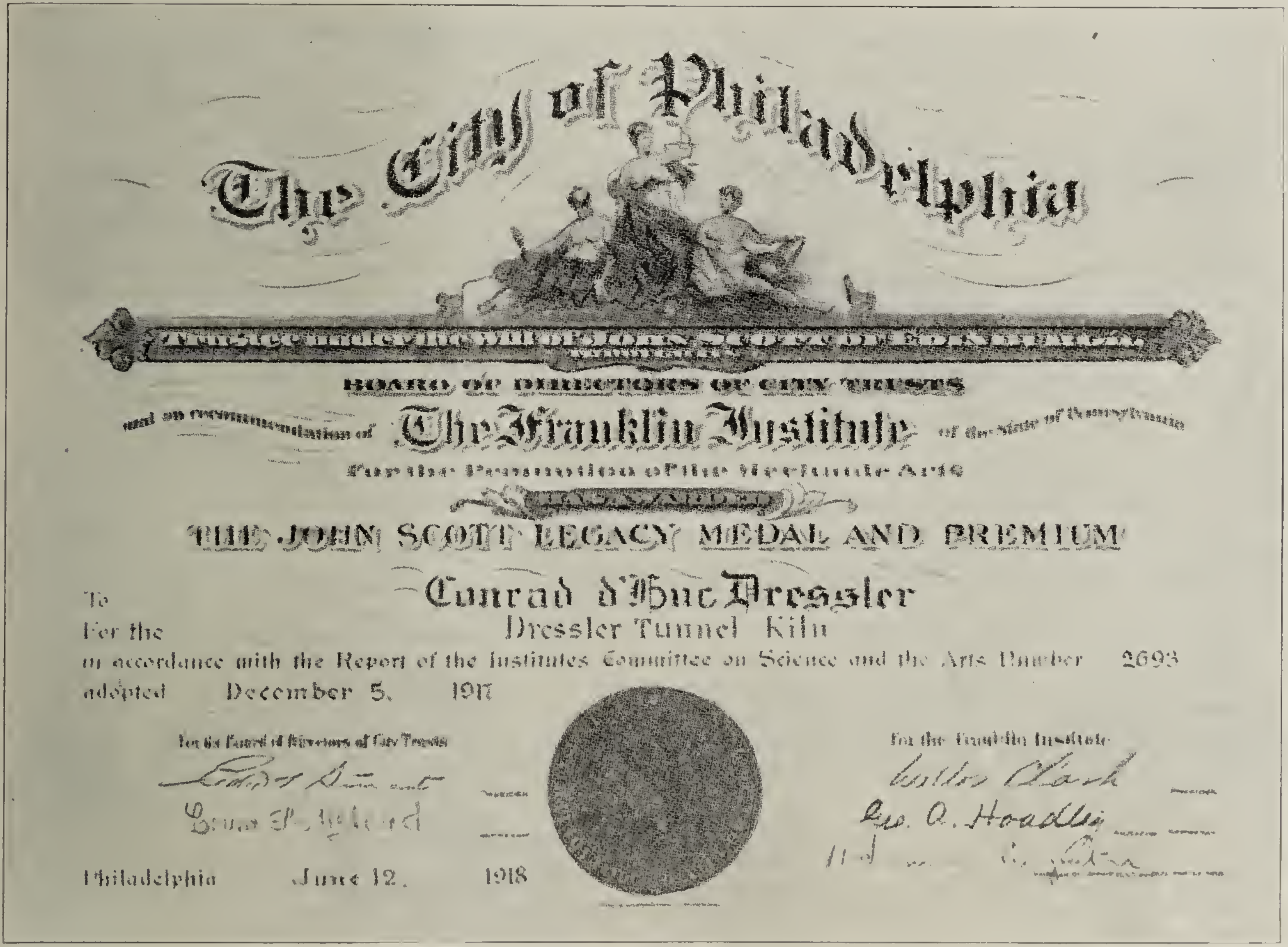
Brookville Truck & Tractor Co.
Brookville, Pennsylvania



THE KILN OF SURE CONTROL

AMERICAN
DRESSLER
TUNNEL KILN





The City of Philadelphia

BOARD OF DIRECTORS OF CITY TRUSTS

and on recommendation of The Franklin Institute of the State of Pennsylvania

For the Promotion of the Mechanic Arts

HAS AWARDED

THE JOHN SCOTT LEGACY MEDAL AND PREMIUM

To Conrad d'Huc Dressler

For the Dressler Tunnel Kiln

in accordance with the Report of the Institutes Committee on Science and the Arts Number 2693

adopted December 5, 1917

For the Board of Directors of City Trusts

For the Franklin Institute

Walton Clark

Geo. A. Hoadley

Philadelphia June 12, 1918

AMERICAN DRESSLER TUNNEL KILN, Inc.

171 Madison Avenue
NEW YORK

Written for The Clay-Worker.

SEEN IN NEW JERSEY.

CONSIDERABLE inquiry is heard regarding brick and other burned clay building materials since the ban was raised from building. But as yet it has not reached the stage of actual purchase. In a general way it is more in the nature of asking whether it is wise to attempt to build the coming spring, or wait for a reduction in the price of materials. Not many are yet asking the price, nor are they saying that they intend placing orders in the near future. However, most sellers of brick and similar materials will hardly object to receiving any inquiry.

Prices of common brick vary with the locality in which they are purchased. In Newark they have ranged from $17.50 to $19.50 during the past month. But sales have been very small and inquiry dropped to almost nothing. Jersey City quoted the New York price which was as low as $13.50 for one grade of Hudson rivers and up to $14.50 to $15.00 for another. No movement of importance was reported. Paterson quoted $17.50 to $20.00 at the yard, but without business. Elizabeth named $16.75 for common brick, without business. At Perth Amboy, in the Raritan district they were as low as $12.00 for some grades, but with only a few barge loads sold and those for storage, not for use this fall. That is the story of the price and demand situation as it has developed in New Jersey during the past month. Little better business will develop the present month, but some hope that by January buyers will begin to investigate supplies with a view to doing business.

Fred C. Wentworth, a well known architect of Paterson, says that no building will be done for the coming five years. "Prices of building material are so high," he says, "that it is quite impossible for the average man or firm to think of doing much construction work until they come down and because of conditions that exist, and will exist, it will be useless to expect any considerable improvement until the war influence has passed and that will require at least five years. I hope I am wrong, but I am sure I am right and I feel certain that it will be at least that long before any construction work of importance will be undertaken in the northern part of the state, at least. If it comes sooner I shall think it due to circumstances which do not now appear."

Nathan H. Sloan, brick broker, of Paterson, says he is getting considerable inquiry, but that thus far it hasn't reached the point of buying. He says that it is improvement to have inquiries since he has had very little of that for the past six months. A number are inquiring of him whether it is worth while to think about building this sprin. He is also asked to give his opinion regarding probable prices during the coming season. To all of these questions, each one of them vital in its way, he is obliged to answer that no one can foresee what will be done in the future, but that he hopes to see such modifications as will develop into a reasonably good business.

Paterson will build two grade schools the coming year. Both are badly needed. The pupils in two different school houses are going in buildings which have been repeatedly condemned by the state authorities, but they have permitted the city to use them because of the untoward condition which existed. No estimate of cost has been given out, but a grade school recently finished cost approximately $275,000 and it is supposed that these two will cost about that much each. Considerable mill construction has been awaiting the close of the war. The plans for a dye house to cost $30,000 have been filed within a few days and at least half a dozen other mill projects are under consideration and will develop as soon as the conditions admit. Some have estimated the coming mill construction here as probably approximating $2,000,000. In addition to this some apartment house construction and a great many private dwellings are to be erected as soon as arrangements can be completed.

Some burning is in progress at Hackensack as this is written. One or two yards are burning a few arches which they will probably hold for sale next spring before the new season is fully open. The Hackensack yards have not done much business this year. Some of them have burned only a few arches. Others have done better, but none of them have operated to capacity all through the season. They found a ready sale for their output as fast as it was made, and none is left for distribution next season to satisfy the early calls. According to some of the Hackensack interests the future holds much in store that is promising. But it is impossible to determine whether this desirable change will be in full swing so as to help at the beginning of the new season, or whether it will be necessary to wait for another season. The railroad company has laid the siding at Ridgefield Park where all the Hackensack brick are loaded from the boats to the cars which would seem to indicate that they expect business as soon as the new season is open.

The Hackensack Coal and Lumber Company, of Hackensack, which handles building materials, says that it has received a good many inquiries since the armistice was signed, asking about the probable cost of materials and whether it would be advisable to plan upon structural work the coming season or to wait another year before undertaking extensive operations. While the situation is not so acute in Hackensack as it is some other New Jersey cities it is bad enough to call for rather prompt action upon the part of builders.

The war has speeded everything up so that manufacturers find they will have to develop their enteerprises in order to get in line for the new business which is coming their way in the near future. The market for brick and other clay materials will largely increase as one result of the war and unless manufacturers and brokers speed up and take advantage of the opportunities offered, they will lose a part of the advantage they might gain if they chose. Promptness and activity are both necessary now.

A. L. B.

BOOK OF SMILES.

The current issue of the "Book of Smiles" is true to its name and record as a smile producer, but it also touches briefly some of the serious things now uppermost in the minds of us all. For instance, it says: "Peace means a great revival of building operations, with a record-breaking demand everywhere for BRICK." The inevitable conclusion is that now is the time to equip brick and tile plants with the Standard one-man dryer. This idea is made manifest in the ad of the Standard Dry Kiln Company on page 490. Another "smile" that may well be considered seriously is, "Let us hope that the excellent example of the 'Four-minute men' will revolutionize after-dinner oratory." So mote it be.

TRADE NOTES.

Tomas Hernandez, Jaguey Grande, Catabzas, Cuba, advises us he is in the market for machinery for kneading or mixing clay.

H. O. Lague, P. O. Box 535, Spark, Nevada, writes that he is organizing a company at that place to manufacture clay products.

A very welcome visitor to The Clay-Worker sanctum recently was Major Matt King, of the Aircraft Service, with headquarters for the present in Indianapolis. Before the war Major King was secretary and directed the destinies of the Permanent Building Society, of Des Moines, Iowa. He did much good work in boosting brick and hollow tile silos and other permanent farm buildings, and expects to return to that important field when released from Government service.

DEPENDABILITY IN PERFORMANCE IS THE STRIKING CHARACTERISTIC OF

THE UNDERWOOD PRODUCER GAS BURNING SYSTEM

(Patented)

YOU CAN DEPEND UPON IT TO

Save Much in Fuel
Save Much in Labor
Give Ideal Burning Conditions
Reach Any Necessary Temperature
(2600° to 2800° is easy)
Possess a Host of Other **Real** Advantages

The above are reasons why every thinking, progressive Clayworker should investigate the system.

Moreover, every producer of Clay Products who takes into serious consideration the drastic fuel restrictions of the Government, must see in this system the one true method of burning clay products economically, and in accordance with the Government's mandates to conserve fuel.

Again, do not lose sight of conditions which will prevail after the war. Our experience now teaches us how vital it is to conserve fuel and labor, and the only way in which we can profit by this lesson is to prepare by installing dependable, economical appliances, and for the burning of clay products the Underwood system is the one best bet.

The Manufacturers Equipment Co.

Dayton, Ohio, U. S. A.

Direct Selling Agents,
J. C. STEELE & SONS,
Complete Line of Clay-
Working Machinery.

PERRY & DUKE,
Canadian
Representatives,
841 College St.,
Toronto, Ont., Canada.

Written for The Clay-Worker.

AMONG PHILADELPHIA BRICK PLANTS.

BRICK MANUFACTURERS of this vicinity report that the demand for their product is very small at the present time and blame the city officials as the indirect cause. Cyrus Borgner, one of the leading manufacturers of brick and terra cotta in this district explains that the large operative builders of this city hesitate to start any big operations which they have contemplated until the city has made the necessary improvement, such as the laying of sewers, gas and water pipes, paving and all other installations in and upon the highways upon which land awaiting development borders. The construction of over six hundred branch sewers out of the thirteen hundred asked for has been authorized by councils, but work upon these is being held up until money to build them has been appropriated.

Isaac Greenburg, owner of the "Greystone" Apartments in Chester, destroyed by fire last week, will rebuild as soon as the insurance adjusters have completed their task. The loss on this building was $50,000.

What is hoped by builders to be the extreme low mark in the rapidly ebbing tide of building construction was reached here in November when only 344 operations were undertaken at a cost of $567,260.00. This is the low mark for the past ten years. In the corresponding month last year, 479 operations were undertaken, the cost of which was $1,712,520.00; other Novembers in the previous years between 1908 and 1918 range between $1,919,880.00 for 1,225 operations in 1912, and $4,451,925.00 in 1916.

The terra cotta works of William Kolb, Jr., of this city, are greatly hampered in its work by the prevailing scarcity of labor. Mr. Kolb, however, is in an optimistic frame of mind, and says that he expects to find the labor situation adjusting itself in the near future, at least in time to supply the demand for the spring building. Mr. Kolb voiced an opinion that during the coming year there would be a heavy increase in local building operations, and a tremendous foreign demand for bricks, terra cotta, etc., which will be used in the gigantic reconstruction work to be undertaken in the devastated sections of France and Belgium.

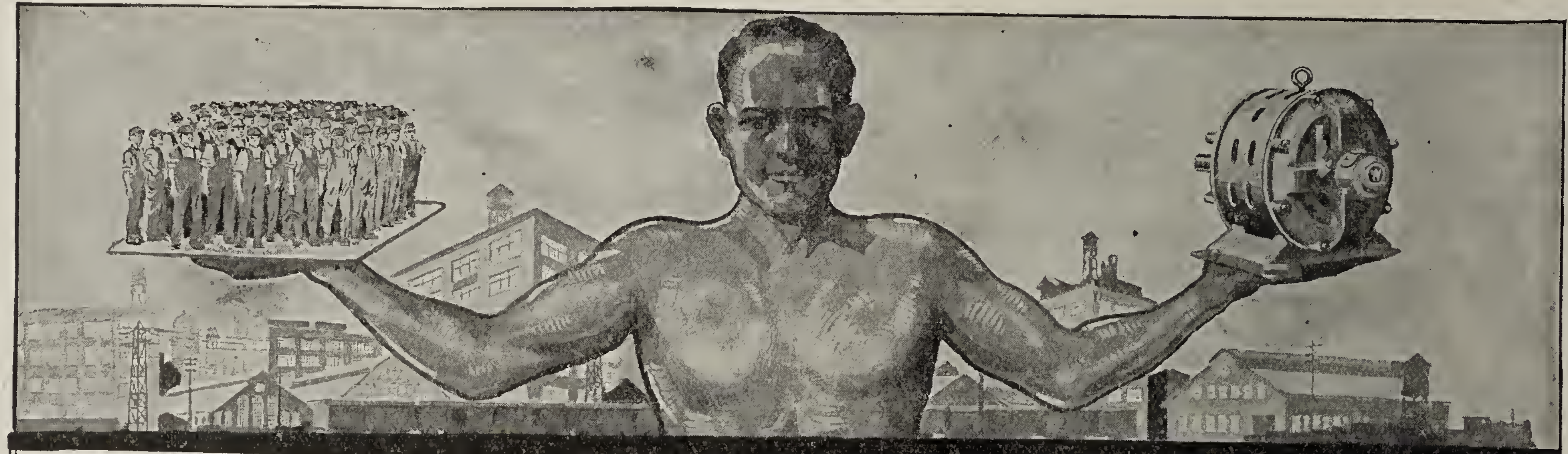
J. C. O'Callaghan, who is well known in Philadelphia building circles, predicts that apartment houses will become more popular than ever now that the war is over. Local manufacturers of brick and other commodities along that line look for a considerable amount of business from that source as a large number of apartment house operations are now contemplated.

The Eastern Hydraulic Pressed Brick Company reports that this season is marked by the smallest amount of business activities in the history of their organization.

The veteran brickmaker, William Conway, reports a fairly satisfactory year, notwithstanding it has been fraught with much tribulation through lack of coal and a scarcity of labor, both very troublesome factors.

Chambers Brothers Company, well known firm of brick machinery manufacturers, has been kept fairly busy during the war period. Like other concerns in the east they have suffered from shortage of labor and difficulty in getting material, but have kept about 75 per cent. of a normal force engaged on indirect government orders. They report almost no business from the building brick trade but have had something from the fire brick industry. One bright spot in their business calendar was the shipment of a complete equipment of brick machinery for a plant at Shanghai. This has resulted in an inquiry from the same parties for a duplication of the outfit. They look forward to gradual resumption of regular line of work in the near future.

A. QUAKER.



Weighing Production Factors

Why should the labor shortage interfere with production, when the use of electricity as the driving power permits speedier work with fewer attendants? Electric drive possesses many time-saving,

LABOR-SAVING

and fuel-conserving possibilities that only practical application to individual plant conditions can fully reveal—and manufacturers are finding this method of inestimable assistance in meeting the present crisis of labor shortage. Two important factors that have made this solution possible and profitable, are the dependability and durability of

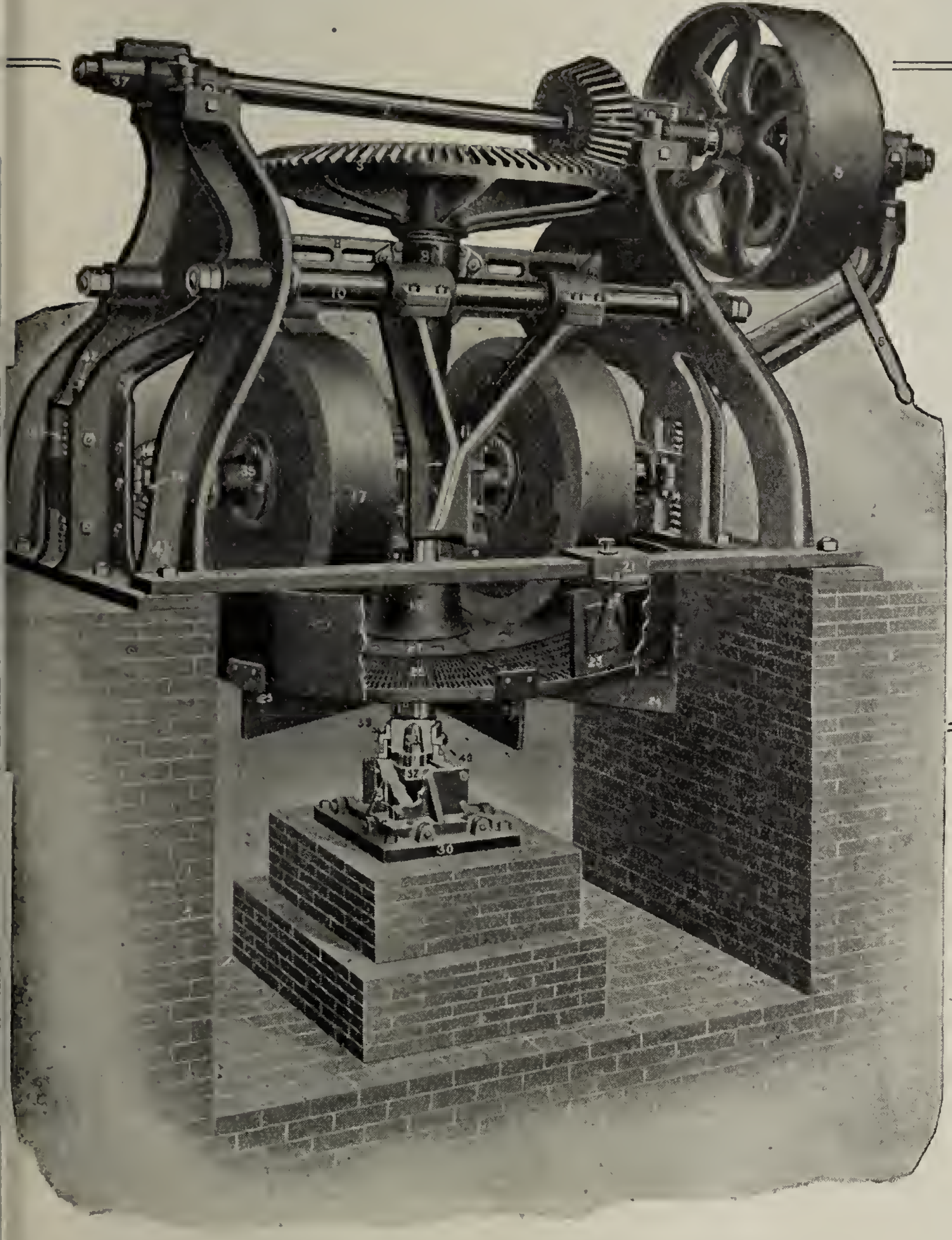
WESTINGHOUSE EQUIPMENTS

They are effectually helping to produce more with less men in a manner that our specialists will be glad to explain to you.

WESTINGHOUSE ELECTRIC & MFG. CO.,
East Pittsburgh, Pa.

Westinghouse W WESTINGHOUSE ELECTRIC

THE WONDER WORKER



10 Foot Dry Pan

The Stevenson Company

Wellsville, Ohio

CONSTRUCTION

This pan is especially constructed for Real Heavy Duty Grinding of Shales, Fire Clays, Sand Rock, Ganister, Limestone, etc., and has Made Good, both as to low cost of maintenance and exceptionally large production tonnage.

It is equipped with--

Friction Clutch Pulley, 48x18 inches.

Crown Wheel—72" diam., 8" face, 6¾" bore.

Pinion Wheel—18" diam., 8" face, 4" bore, cast steel.

Gear Ratio—4 to 1.

Speed of Drive Pulley—140 R.P.M.

Drive shaft is made so that pan can be driven to either right or left, thus allowing both sides of gear teeth to be used.

Upright shaft is of wrought hammered iron.

Rolls—54" diam., 12" or 14" face, as desired, and are fitted with renewable rims and bushings.

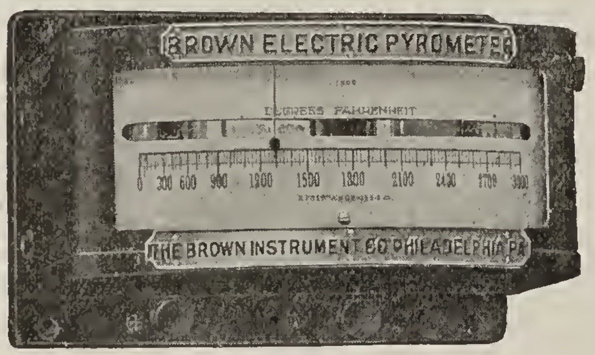
Write for further information and catalogue.

Control of Kiln Temperatures Necessary for real efficiency

The first step in efficiency in the elimination of coal waste, the saving of labor and the guarantee of an A-1 burn before you open up your kiln—depends on uniformly increasing temperatures throughout a kiln burn and the proper temperature at high heat.

Three hundred big brick plants look to Brown Pyrometers to tell them accurately what their kiln temperatures have been throughout the entire burn. The economy of a kiln control, proven well worth while by large and small brickyards, can be just as well applied to your own plant.

Write now for complete information to the Brown Instrument Co., Philadelphia, or any of their district offices in New York, Pittsburgh, Detroit, Chicago or St. Louis.



Brown Pyrometers

NATIONAL DRAINAGE CONGRESS HOLDS IMPORTANT MEETING.

(Continued from page 513.)

To the Officers and Members of the National Drainage Congress, in its Seventh Session Assembled:

We, your Committee on Resolutions, submit for your consideration the following:

Whereas, The termination of the greatest contest of arms that the world has ever known has resulted in the overthrow of the forces of despotism and the triumph of the allied armies who have fought for justice and world freedom, and won victories which we believe will lead to a peace which shall endure for many generations, and which is now so far assured that hundreds of thousands of the men who have won these victories may lay aside the weapons of war and return to those avocations which they forsook to face the toil, hardship and danger which they have endured so unflinchingly:

Therefore, We of this Drainage Congress, sharing the common sentiment of America, desire to provide for our returning soldiers, not only welcome and honor, but substantial aid in re-establishing them in self-supporting business suited to their capacities.

We, therefore, recommend that the development of our internal resources by state and nation be undertaken upon the largest scale possible, to the end that employment may be afforded as many men as possible, in the initial development, which will open up wider fields for steady employment in agriculture, transportation, manufacture and kindred activities.

Therefore, the Drainage Congress urges the appropriation of one billion dollars and the making immediately available of such portion thereof as may be economically and efficiently expended for public works of drainage, irrigation and flood protection. As a preliminary step, we ask that the following petition be presented to the President of the United States.

In view of the vital importance of an early formulation of a constructive program of co-ordination in the development of interior navigation, drainage, flood protection, water power and allied activities, we respectfully urge you to appoint the Waterways Commission of seven members which the Act of August 12, 1917, empowered you to create. That Act calls for the appointment of an army engineer as a member of the commission and we respectfully suggest that in recognition of the splendid services rendered to the government in its time of need by a great body of civilian engineers, you also appoint not less than four civil engineers to serve on the commission.

Resolved, That it is the settled conviction of this Congress that the creation of a National Department of Public Works is a national need, the supply of which should not be further delayed.

Resolved, That a bill calling for the creation of such a department, whose executive head shall be a member of the President's Cabinet, be formulated by a committee to be appointed by the President of this Drainage Congress, setting forth the functions of the department and outlining the duties of its officials; and that the bill so prepared be presented to the 66th Congress at its first session; and that the members of this Drainage Congress make individual and corporate effort to create a nationwide sentiment in support of such a bill.

Resolved, That this Congress favors the development of internal navigation, with all of the necessary accessories of wharves, docks and warehouses, and that it favors the creation of all of the water power which may be developed as a result of improving the waterways.

Resolved, That we favor the early commencement and active prosecution until completion of the following arterial waterways: The Intracoastal waterway on the Atlantic seaboard; the Lake Erie and Ohio River canal; the vigorous prosecution of the improvement of the Ohio River according to the plans already accepted therefor; the creation of storage reservoirs on the Alleghany and Monongahela Rivers as measures of flood control and of aiding navigation on the Ohio and Mississippi Rivers by releasing the stored waters during low water periods, and that as measures of flood control and as aids to navigation storage reservoirs be created wherever natural conditions favor such construction; the Lakes-to-the-Gulf waterway via the Chicago Sanitary and Ship canal, the Desplaines and Illinois and the Mississippi Rivers; the same to be carried on as a co-operative project by the U. S. Government and the state of Illinois.

The active prosecution of the adopted plans for improving the navigability of the upper Mississippi and the Missouri Rivers; the early completion of the improvements adopted for the Columbia River.

Together with the improvement as fast as possible of the 15,000 miles of navigable rivers tributary to our arterial streams.

Resolved, That we use our best endeavors as a corporate body and as members thereof to secure federal pecuniary aid in the drainage of swamp and overflowed lands, in the same manner that such aid is now, and has been for many years, extended to irrigation projects. And to this end we recommend the passage by Congress of a bill along the lines of House of Representatives Bill 10548, 65th Congress, 2nd session; and we recommend that a committee be appointed by the president of this Drainage Congress to study said bill 10548 and make suggestions for such amendments or changes as shall cause the bill to meet more fully the needs that this Congress desires to fill. This legislation should be made to apply to every state in which there are lands to be drained.

Whereas, Local drainage projects for reclamation of overflow and swamp lands in most states have in the past been organized and developed with little or no regard for a final plan covering the entire valleys in which the said projects are located; and

Whereas, the drainage laws in many of the states are not conducive to unified effort throughout valleys which include large areas requiring reclamation; therefore, be it

Resolved, That the governors of the several states concerned be respectfully urged at this time to consider the desirability of unifying state agencies responsible for various phases of state water resources, and of recommending the immediate passage of such state acts as may be necessary to unify and clarify state drainage laws, so that projects for drainage shall be encouraged, and shall be made permanently effective, through their approval in advance by a single competent state authority.

Whereas, There are vast areas of semi-arid land in North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas that now produce less than one-third of the possible productivity of the soil, by reason of lack of moisture; and

Whereas, It has been demonstrated that flood waters can be diverted from the streams and stored in the subsoil of a great percentage of this land, thereby increasing its productivity and decreasing the flood heights in the lower reaches of the rivers; therefore, be it

Resolved, That we recommend to the Congress of the United States upon submission of proper projects for diverting these flood waters and storing them subterraneously, as herein pointed out, that it appropriate the necessary money to accomplish the purpose of reducing flood heights and consequent destruction of property, with the further result of increasing food production by the plan suggested.

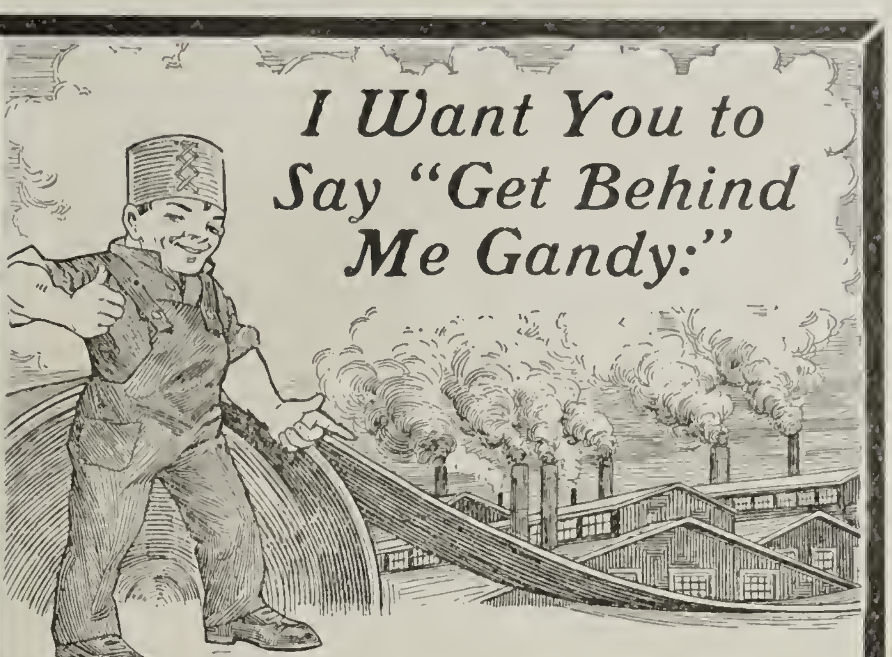
Resolved, That as an organization and as individuals we bend our energies to securing internal peace and contentment by the promotion of food production, abundant in quantity and of the kinds suited to the varied soils and climatic conditions of our country. And that we use our best endeavors to harmonize the cost of living with the purchasing power of the consumer along lines which will give the producer a fair return for his products and the laborer a living wage.

Resolved, That we recognize the vital importance of abundant facilities for transporting the products of the field, the forest, the mine, and the factory. Hence, we are in full sympathy with the efforts to provide highways of permanent construction, veining our whole land, and therefore, we offer our hearty co-operation to the road builders who are banded together for this great service to our whole people, and we extend a fraternal greeting to the organizations promoting this work. We pledge ourselves to co-operate with them in every honorable effort to secure effective legislation and to aid in every other way within our power.

In furtherance of this purpose, we invite an alliance of the National Highway Association with our body, to the end, that we may be of mutual aid in securing the legislation, state and national, essential to the accomplishment of the purposes for which each organization exists.

We most heartily favor plans to provide agricultural land for our returning soldiers and sailors. We believe that such lands should be our best. Lands not only possessing a rich soil, upon which agriculture can be carried on successfully and with profit, and located, as far as practicable, convenient to markets. We believe that such lands should be sold to our returning soldiers and sailors at actual cost to the government, and upon the most favorable helpful terms. We realize the importance of increased agricultural development, and to this end we favor the immediate formation in the Department of Agriculture of a Bureau of Agricultural Colonization and training. We favor the establishment of agricultural training schools, in which our returning soldiers and sailors, and others who may seek such training preliminary to beginning actual form operations, may receive the fundamentals of an agricultural education. We favor the establishment of national, state, county and township farm associations for the betterment and the upbuilding of that most important industry.

Resolved, That the President be empowered to appoint a committee of three, consisting of an attorney, a financier and a business man to devise and report a plan for stabilizing the selling values of drainage bonds and other securities issued for the financing of improvement works, said committee to report its findings and recommendations to the next annual meeting of the National Drainage Congress.


I Want You to Say "Get Behind Me Gandy:"

If production's the thing that haunts you o' nights — put *GANDY*, the original stitched cotton duck belt, back of your wheels. You can then rest assured that you'll be getting 100 per cent. production—as far as belting is concerned.

GANDY has every quality which makes it "just right" for hard work inside or out.

GANDY is sturdy cotton duck. Not strips joined ply on ply, but one piece folded—welded together by special stitching and impregnated with secret compounds which make it water, heat and steam proof—grit, grime, oil and acid proof.

GANDY Gets all the Pull From the Pulley.

Just say "Get behind me, Gandy," and end your belting problems.

Send specifications for transmission or conveyor belting to Mill Supply House or direct to home plant.

If in doubt as to size or ply, our Engineering Service will set you straight.

"On-the-Job" *GANDY*
Service Manager

THE GANDY BELTING COMPANY
749 West Pratt Street BALTIMORE, MD.
New York Branch, 36 Warren St.

Look for the Green Edge and GANDY Trademark.

GANDY BELT
Stitched Cotton Duck

INDEX TO ADVERTISERS

Alton Brick Co.................... 486
American Clay Machinery Co.. The........................545, 546
American Dressler Tunnel Kiln. 553
American Process Co............ 566
Anderson Foundry & Machine Works 480
Arbuckle & Co.................... 481
Baird Machinery & Mfg. Co...... 580
Ball Engine Co.................... 551
Barr Clay Co., The................ 486
Books for Clayworkers 485
Brookville Motor Truck Co...... 552
Bonnot Co., The.................. 475
Boss, John C...................... 560
Brewer, H. & Co.................. 575
Brown Instrument Co.. The..... 558
Caldwell, H. W. & Son Co....... 563
Cameron Clay Products Co..... 486
Carnell, George.................. 567
Chambers Brothers Co........... 489
Chase Foundry & Mfg. Co........ 580
Chattanooga Paint Co........... 564
Chicago Brick Machinery Co,... 580
Chisholm. Boyd & White Co..... 478
Danville Brick Co., The.......... 486
Dickinson, W. W. Jr............. 488
Didier-March Co 483
Drying Clay Wares.............. 572
Eagle Iron Works................ 567
Eastern Machinery Co., The.... 571
Engelhard, Charles.............. 565
Fate, J. D. Co., The 579
Flint River Brick Co............. 578
Frost Mfg. Co., The.............. 577
Freese, E. M. & Co............... 576
Gandy Belting Co................ 559
Geijsbeek Engineering Co....... 566
Hamilton & Co., W. E........... 270
Harrington & King Perforating Co.............................. 476
Important Federal Laws........ 566
International Clay Machinery Co. 549
Kushequa Brick Co.............. 486
Kushequa Keramic Co........... 486
Lake Shore Shale Brick Co..... 486
Lakewood Engineering Co 580
Lovejoy, Ellis.................... 569
Mantel, Tile and Grate Monthly. 563
Manufacturers Equipment Co., The............................ 555
Marion Machine Foundry & Supply Co....................... .. 560
Mathews Gravity Carrier Co.... 476
Mayer, C. P...................... 487
McAvoy Vitrified Brick Co...... 486
Medal Paving Block Co.......... 486
Metropolitan Paving Brick Co.. 486
Mittler Wire Mfg. Co............ 565
Murphysboro Paving Brick Co.. 487
National Paving Brick Manufacturers' Association............. 486
Ohio Galvanizing & Mfg Co., The 567
Parker-Russell Mining & Mfg. Co. 564
Phillips & McLaren Co........... 563
Potts, C. & A. Co................ 573
Purington Paving Brick Co..... 487
Ricketson's Mineral Paint Wks. 560
Rodgers, L. E. Engineering Co.. 477
Roessler-Hassslacher Chemical Co , The......................... 564
Schurs oil Burner Co..... 560
Standard Dry Kiln Co., The... . 490
Steele, J. C. & Sons.............. 474
Stevenson Co., The............. 557
Terre Haute Vitrified Brick Co.. 487
Thwing Instrument Co........... 567
Tile Underdrainage.............. 486
Toronto Foundry & Mach. Co... 566
Wallace Mfg. Co................. 574
Webster & Kincaid.............. 570
Westinghouse Electric Mfg Co.. 556
Williams, C. K. & Co............ 564

SEE TABLE OF CONTENTS ON PAGE 544.

ORIGINAL BOSS SYSTEM **Drying and Burning** ORIGINAL BOSS SYSTEM

BOSS TEN-HOUR DRYER

Use either waste heat or exhaust steam.
No live steam. No direct firing.

BOSS SYSTEM OF BURNING BRICK

Applies to all types of kilns and will save **HALF** in your cost of burning.

Let us save Time and Money for you

ORIGINAL BOSS SYSTEM **JOHN C. BOSS CO.** ORIGINAL BOSS SYSTEM
Monger Bldg., Elkhart, Indiana

YOU HAVE KNOWN FOR YEARS THAT

RICKETSON'S MORTAR COLORS

are pure and brilliant in tone, economical in application, absolutely reliable, and a permanent guarantee against fading and washing.

Why Not Insist on Having Them?

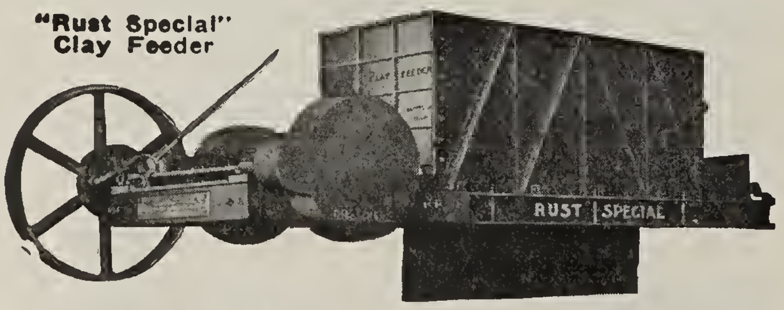
They are the acknowledged best for all uses---Mortar, Brick, Cement, Concrete and Stone.

Red, Brown, Buff, Purple and Black.

RICKETSON MINERAL PAINT WORKS
MILWAUKEE, WIS.

Tempers Clay Perfectly—Improves Product—Speeds up Plant

"Rust Special" Clay Feeder



Will help you get full capacity out of your dry pan, pug mill auger—insure a regular delivery to your offbearers, and also cuts out labor of two men.
Ask for Rust Bulletin.

MARION MACHINE, FOUNDRY & SUPPLY CO.
P. O. 156, MARION, IND.

35000 OIL & GAS
BURNERS SAVING FUEL!

Perfected to
The Minute
HEAT TELLS!
Write us today

SCHURS OIL BURNER CO.
Los Angeles, Cal., U. A. S.

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Ceramics

DEC 26 1918

THE CLAY WORKER

Christmas

1918

PEACE ON EARTH.

While songs are sung and bells are rung,
Tho' tears are shed o'er the hero dead,
The victory of right makes the way look bright
With joy and cheer for the glad New Year.

What wonderful depth of feeling and significance of meaning we find this year in offering the familiar holiday greetings. Transition from the terrible carnage of war to a victorious peace brings joyful tumult of sentiment and activity for peace and plenty and a fuller brotherhood of mankind. Let us be merry and happy, but not boastful or vainglorious; let us praise and glorify Him to whom all praise and glory is due, and as an attest of this spirit let us sympathize with those who grieve, and help those who are in need; let us honor our victorious soldiers, and make of their great crusade a vehicle to further the spirit of brotherhood among nations. And in memory of those golden-starred heroes who have made the supreme sacrifice let us make a resolution to promote the spirit of brotherhood among mankind, that war may come no more, but peace and good-will shall reign henceforth throughout all the earth.

T·A·RANDALL·&·CO
PUBLISHERS·INDIANAPOLIS

Published monthly. Subscription price, $2.00 per year. Entered as second class matter, January, 1884, at the post office at Indianapolis, under the act of March 3, 1879.

TABLE OF CONTENTS
Page 544

BUYERS' READY REFERENCE LIST
Pages 479, 481, 482

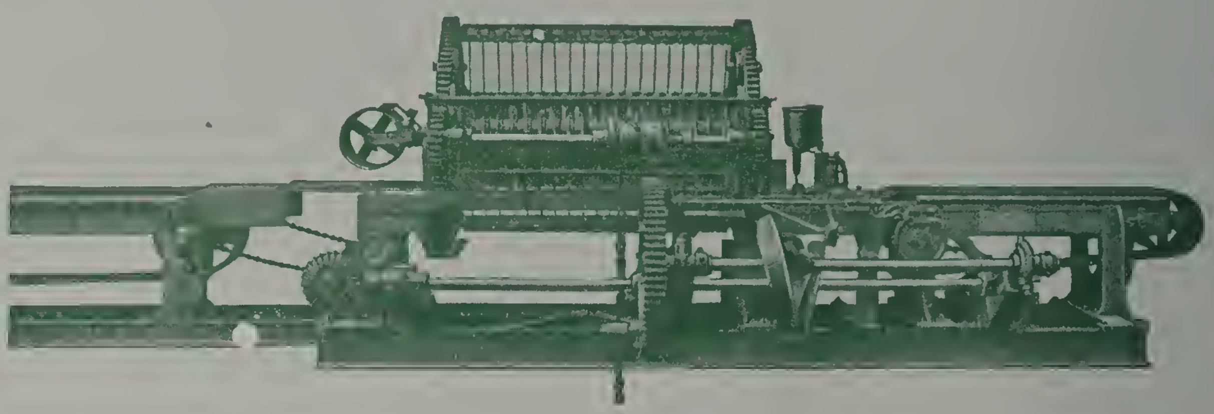
INDEX TO ADS
Page 560

THESE HAVE RELIEVED MUCH TROUBLE

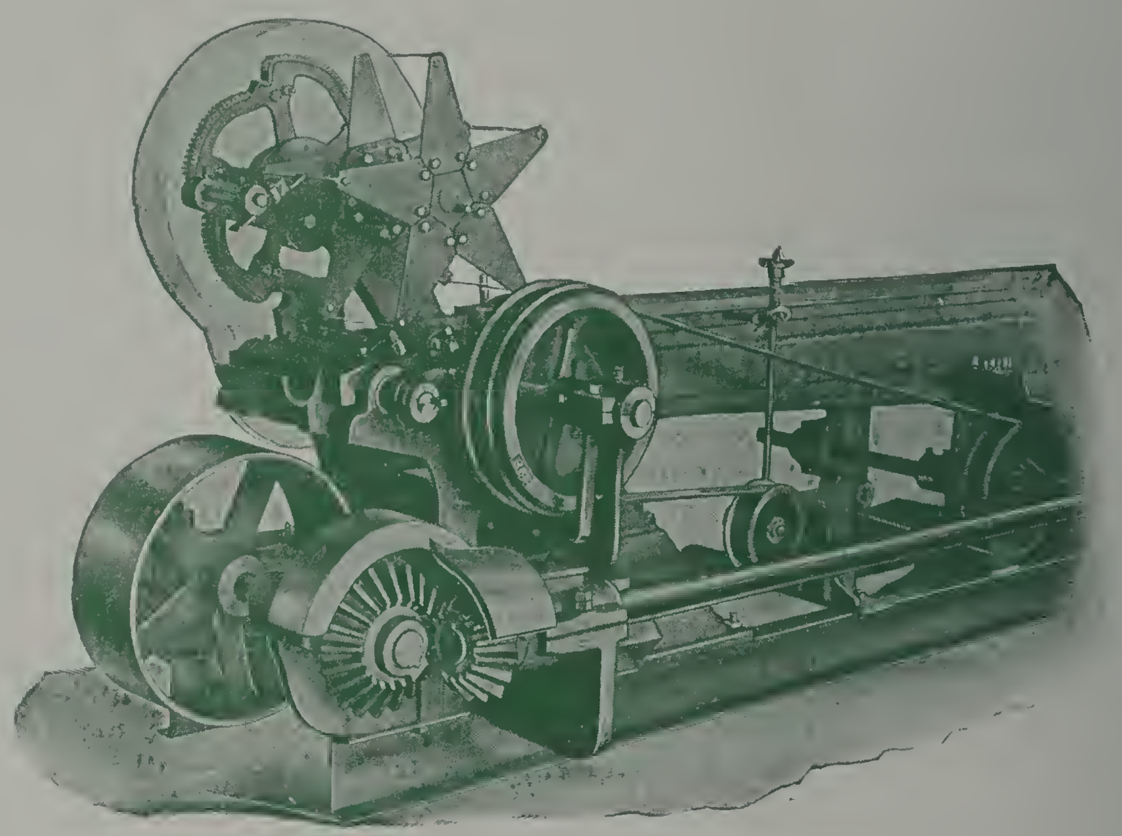
We are showing miniature cuts of the No. 18 Sidecutter and of the Rotary Automatic Endcutter. Either of these will cut any capacity up to about 150,000 per day, and do the work with greater accuracy and ease than it has ever been done before.

Dozens of these are being used with other makes of brick machine, as well as the various sizes of machine of our own manufacture.

Write for literature regarding our five sizes of Brick Machines, Pug Mills, Disintegrators, Even Clay Feeders, Crushers, Hoists, Cars, Trucks, etc.



McCoy Brick & Tile Co., Augusta, Ga.: "The No. 18 Sidecutter is certainly doing splendid work. We did not think it possible for any sidecutter to run so nicely and smoothly as this does."



W. E. Dunwody, Macon, Ga.: "I think yours is the best cutter in existence. That is putting it about as strongly as I know how, and if you know any stronger way to put it, write me, and I will take pleasure in affixing my signature."

HUNDREDS HAVE TESTIFIED AS ABOVE.

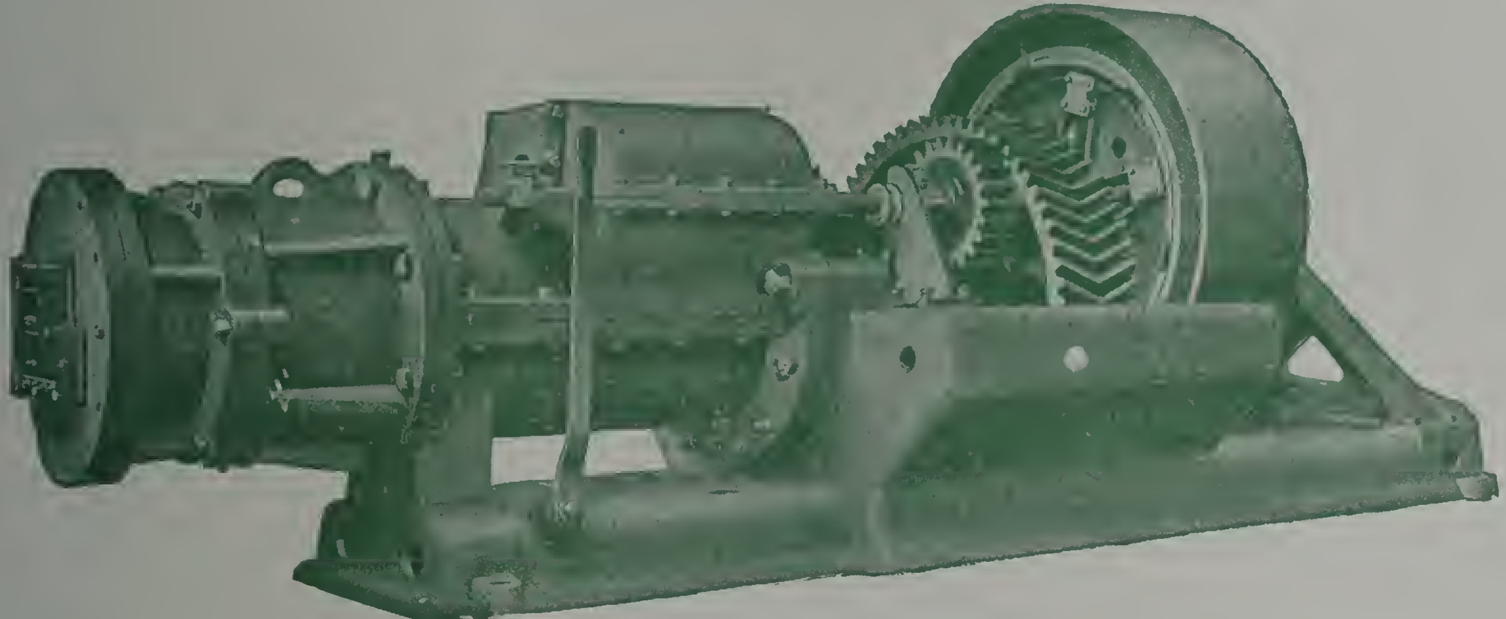
J. C. STEELE & SONS

Manufacturers of Brickmaking Machinery
Statesville, N. C., U. S. A.

Western Representative, George H. Smith,
1618 East 37th St., Kansas City, Mo.
Eastern Agents, Carter Engineering Co.,
No. 1 Madison Ave., New York City.

Northern Agents, Manufacturers Equipment Co.,
Dayton, Ohio.
Canadian Agents, Perry & Duke,
841 College St., Toronto, Ont.

HOLLOW-WARE MACHINE
FOR LARGE OUTPUT



No. 20 Bonnot Hollow-Ware Machine

NOTE THE FOLLOWING POINTS:

One piece base and frame---no chance to get out of line.

Single geared rolling mill type of gears, running in oil, with complete housing to exclude dust.

Two complete thrust bearings---total of 445 square inches.

Force feed---to prevent clay working back.

Three sizes of augers---14-in., 16-in. and 18-in. diameter, with liners to suit.

All machined joints, insuring proper fit, alignment and interchange of parts.

Special 6-arm extra heavy driving pulley.

Full specifications on request.

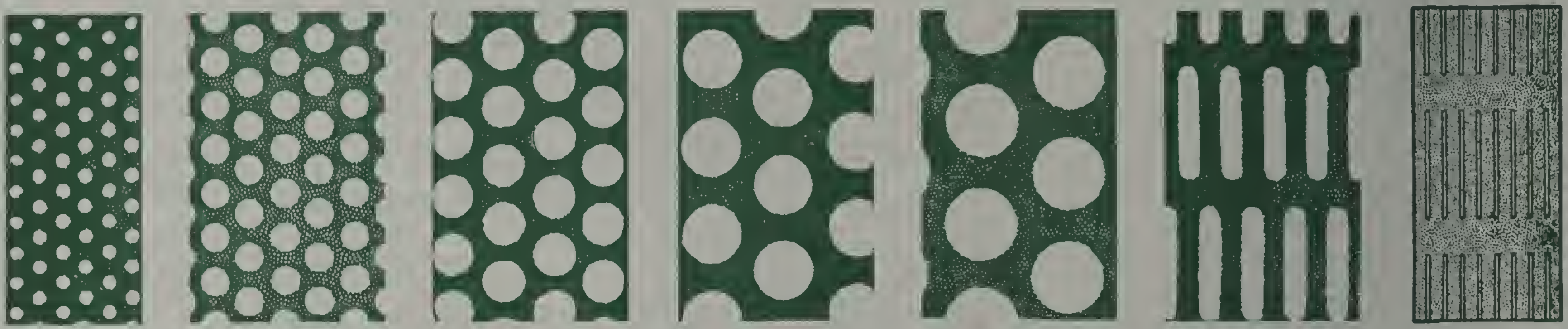
THE BONNOT COMPANY
CANTON, OHIO

211 Higgins Bldg.
LOS ANGELES, CAL.

PERFORATED STEEL SCREENS

FOR CLAY, SHALE, SAND, GRAVEL, STONE AND CEMENT.

Anything You Want in Perforated Metal.



Perhaps you may be interested in some of the sizes shown above; they are a few of the many that we make.

We have sizes suitable for DRY PAN SCREENS, CAR DECKS, CONVEYORS, Etc.

Tell us of your needs that we may send you samples.

The Harrington & King Perforating Co.

NEW YORK OFFICE,
No. 114 Liberty St.

No. 624 North Union Ave.
CHICAGO, ILL., U. S, A.

Quicker and Cheaper Conveying

Gravity carries bricks more quickly and with less chance of breakage

Gravity will do your conveying cheaper and quicker than is possible by any other means. It cuts down every conveying cost—payroll, breakage, delay. Practically every line of industry is represented by the hundreds of users who have realized substantial economies by installing the

MATHEWS
SPEED ECONOMY
GRAVITY ROLLER CONVEYER

Numerous special devices give this system the advantage of being adaptable to the requirements of practically every plant. Different products can be routed to any desired point by the use of switches and the portable or permanent sections of steel ball-bearing rollers. Deliveries are simplified and speeded.

Install a Mathews Gravity Conveyer and every possibility of unnecessary delay is eliminated, breakage costs minimized and the pay roll appreciably cut. Learn the particulars of this efficiency system. A line to us will bring you complete information.

MATHEWS GRAVITY CARRIER COMPANY, **106 Tenth Street, Ellwood City, Penna.**
Branch Factories: Toronto, Canada—London, England

RODGERS FOR DRYERS

A TIP

Business is "pickin' up" and, if you are planning improvements on the old plant - or building a new one - for the manufacture of clay products, better "get in line". The "wise men" are getting "in" ALREADY, and if YOU "want WHAT you want WHEN you want it," better

TAKE THE TIP

L. E. RODGERS ENGINEERING CO.

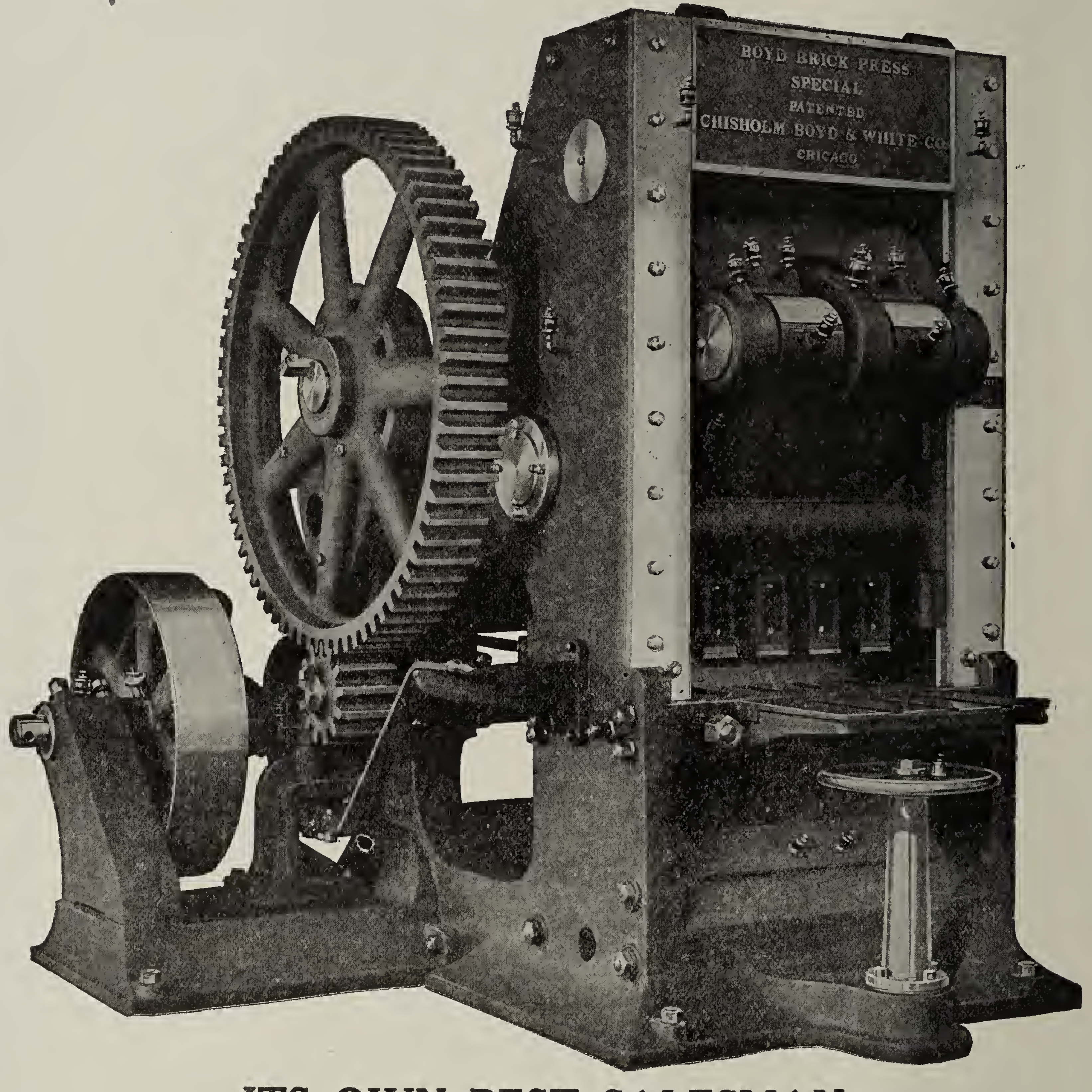
Waste Heat Dryer Specialists
Clay Products Engineers

Largest Manufacturers of Brick Drying Equipment in the United States.

30 North LaSalle Street ∴ ∴ CHICAGO

The Boyd Brick Press

"Built Up to a Standard—Not Down to a Price"



ITS OWN BEST SALESMAN

FIRE BRICK PRODUCED AT LOWER COST

For more than 20 years the BOYD BRICK PRESS has been in use for making FIRE BRICK and shapes, and today is used by many of the largest and most successful fire brick manufacturers in the country.

Chisholm, Boyd & White Company

Office and Works, 57th and Wallace Sts. CHICAGO, ILL.

Buyers Ready Reference List.

To Find Any Particular Firm or Advertisement See "Index to Ads" as Cited on Front Cover Page.

Ammeters.

The Brown Instrument Co.
Engelhard, Charles.
Westinghouse Elec. & Mfg. Co.

Analysists and Chemists.

Ceramic Supply & Con. Co.
N. J. State University.

Arch Cutting Apparatus.

Ceramic Supply & Con. Co.

Automatic Clay Bin Emptier.

Fate Co., The J. D.
International Clay Mach. Co.

Automatic Cutting Tables.

(See Cutting Tables.)

Barrows and Trucks.

American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Carnell, Geo.
Chambers Bros. Co.
Ceramic Supply & Con. Co.
Chicago Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Sons, J. C.
Taplin-Rice-Clerkin Co.
Toronto Foundry & Mach. Co.
Wallace Mfg. Co.

Barytes, Carbonate of.

Roessler-Hasslacher Chem. Co.
Williams, C. K. & Co.

Bearings, Roller.

(See Supplies.)

Belting.

Gandy Belting Co.
Manufacturers' Equipment Co.

Belt Conveyors.

American Clay Machinery Co.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Caldwell & Sons Co., H. W.
Carnell, Geo.
Chambers Bros. Co.
Dunlap Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
Gandy Belting Co.
International Clay Mach. Co.
Manufacturers Equipment Co.
Potts & Co., C. & A.
The Stevenson Co.

Blowers.

American Clay Machinery Co.
Arbuckle & Co.
International Clay Mach. Co.
Rodgers Engr. Co., The L. E.
Trautwein Dryer & Engr. Co.

Boilers.

American Clay Machinery Co.
Frost Mfg. Co.

Brick (Building).

Kushequa Brick Co.
Purington Paving Brick Co.

Brick (Fire).

Parker-Russell M. & M. Co.

Brick (Paving).

Alton Brick Co.
Lakewood Shale Brick Co.
McAvoy Vitrified Brick Co.
Metropolitan Paving Brick Co.
Murphysboro Paving Brick Co.
Natl. Pav. Brick Mfrs. Assn.
Purington Paving Brick Co.
Terre Haute Vit. Brick Co.
Shawmut Vit. Pav. Brick Wks.

Brick Conveyors.

American Clay Machinery Co.
Leary Mfg. Co., W. J.
Mathews Gravity Carrier Co.
Potts & Co., C. & A.

Brick and Tile Machinery.

American Clay Machinery Co.
Anderson Fdy. & Mach. Wks.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Carnell, Geo.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Chisholm, Boyd & White Co.
Eastern Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
Frost Mfg. Co.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Sons, J. C.
The Stevenson Co.
Wallace Mfg. Co.

Brick Machines (Soft Mud).

American Clay Machinery Co.
Anderson Fdy. & Mch. Works.
Carnell, Geo.
Eastern Brick Machinery Co.
International Clay Mach. Co.
Potts & Co., The C. A.

Brick Machines (Stiff Mud).

American Clay Machinery Co.
Arbuckle & Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate & Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Steele & Sons, J. C.
Stevenson Co., The
Taplin-Rice-Clerkin Co.
Wallace Mfg. Co.

Brick Machines (Dry Press).

American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Chisholm, Boyd & White Co.
Chicago Brick Machinery Co.
International Clay Mach. Co.

Brick Recutter.

International Clay Mach. Co.

Brick Setting Machinery.

American Clay Machinery Co.
Dickinson, W. W.

Buffing Machinery.

American Clay Machinery Co.

Burning and Drying Systems.

American Clay Machinery Co.
American Blower Co.
Boss, John C.
Ceramic Supply & Con. Co.
Didier March Co.
Flint River Brick Co.
International Clay Mach. Co.
Koch, J. J.
Manufacturers' Equipment Co.
Rodgers Engineering Co., L. E.
Standard Dry Kiln Co.
Trautwein Dryer & Engr. Co.
Webster & Kincaid
Yates, Alfred.

Cars.

(See Dryer and Dumping Cars.)

Castings.

American Clay Machinery Co.
Arbuckle & Co.
Caldwell & Sons Co., H. W.
Chambers Bros. Co.
Fate Co., The J. D.
Frost Mfg. Co.
Manufacturers' Epulpment Co.
Potts & Co., C. & A.
The Stevenson Co.
Taplin-Rice-Clerkin Co.
Toronto Foundry & Mach. Co.

Ceramic Engineers.

Hoehne, Richard B.
Koch, J. J.
Lovejoy, Ellis.
Richardson, W. D.
Trautwein Dryer & Engr. Co.

Circuit Breaker.

Westinghouse Elec. & Mfg. Co.

Clay Crushers and Pulverizers.

American Clay Machinery Co.
American Pulverizer Co.
Arbuckle & Co.
Brewer & Co., H.
Carnell, Geo.
Chambers Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
Frost Mfg. Co.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Phillips & McLaren Co.
Potts & Co., C. & A.
The Stevenson Co.
Wallace Mfg. Co.

Clay Dryers.

American Process Co.
Trautwein Dryer & Engr. Co.

Clay Feeders and Mixers.

American Clay Machinery Co.
Arbuckle & Co.
Brewer & Co., H.
Carnell, Geo.
Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Marion Mach., Fdy. & Sup. Co.
Potts & Co., C. & A.
The Stevenson Co.

Clay Gatherers.

(See Scrapers.)

Clay Steamers.

American Clay Machinery Co.
International Clay Mach. Co.

Clay Technologists.

American Clay Machinery Co.
Ceramic Supply & Con. Co.
Fate Co., The J. D.
Hoehne, Richard B.
Koch, J. J.
Lovejoy, Ellis

Clutches.

(See Supplies.)

Coloring Materials.

Chattanooga Paint Co.
Ricketson Mineral Paint Co.
Roessler-Hasslacher Chem. Co.
Williams & Co., C. K.

Cones.

Orton, Edward, Jr.

Consulting Engineers.

Hoehne, Richard B.
Lovejoy, Ellis.
Richardson, W. D.
Trautwein Dryer & Engr. Co.

Conveying Machinery.

American Clay Machinery Co.
Arbuckle & Co.
Barber-Greene Co.
Bonnot Co., The
Brewer & Co., H.
Caldwell & Sons Co., H. W.
Carnell, Geo.
Chambers Bros. Co.
Dunlap Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Leary Mfg. Co., W. J.
Manufacturers' Equipment Co.
Mathews Gravity Carrier Co.
Potts & Co., C. & A.
Taplin-Rice-Clerkin Co.
Toronto Foundry & Mach. Co.

Continuous Kilns.

American Clay Machinery Co.
Ceramic Supply & Con. Co.
Didier March Co.
Hoehne, Richard B., & Co.
International Clay Mach. Co.
Webster & Kincaid.

Contracting Engineers.

Ceramic Supply & Con. Co.
Koch, J. J.
Lovejoy, Ellis.
Manufacturers' Equipment Co.
Richardson, W. D.
Smith Co., Claude.

Couplings.

(See Supplies.)

Cutting Tables (Brick & Tile).

American Clay Machinery Co.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Steele & Sons, J. C.
Taplin-Rice-Clerkin Co.
Wallace Mfg. Co.

Cranes.

Ball Engine Co.

Cutting Wires.

American Clay Machinery Co.
Arbuckle & Co.
Brewer & Co., H.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Mittler Wire Mfg. Co.

Dampers.

(See Supplies.)

Dies.

Arbuckle & Co.
The Stevenson Co.
Toronto Foundry & Mach. Co.
(See Supplies.)

Disintegrators.

American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Carnell, Geo.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Taplin-Rice-Clerkin Co.
Wallace Mfg. Co.

Draft Gauges.

Brown Instrument Co.
Ceramic Supply & Con. Co.
Engelhard, Charles.
Thwing Instrument Co.

Drag Line Excavators.

Ball Engine Co.

Drain Tile Machinery.

(See Brick & Tile Machinery.)

Drums, Hoisting and Winding.

(See Supplies.)

Dryers.

American Clay Machinery Co.
American Process Co.
Boss Co., John C.
Chambers Bros. Co.
Fate Co., The J. D.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Rodgers Engr. Co., The L. E.
Standard Dry Kiln Co., The
Steele & Sons, J. C.
Trautwein Dryer & Engr. Co.

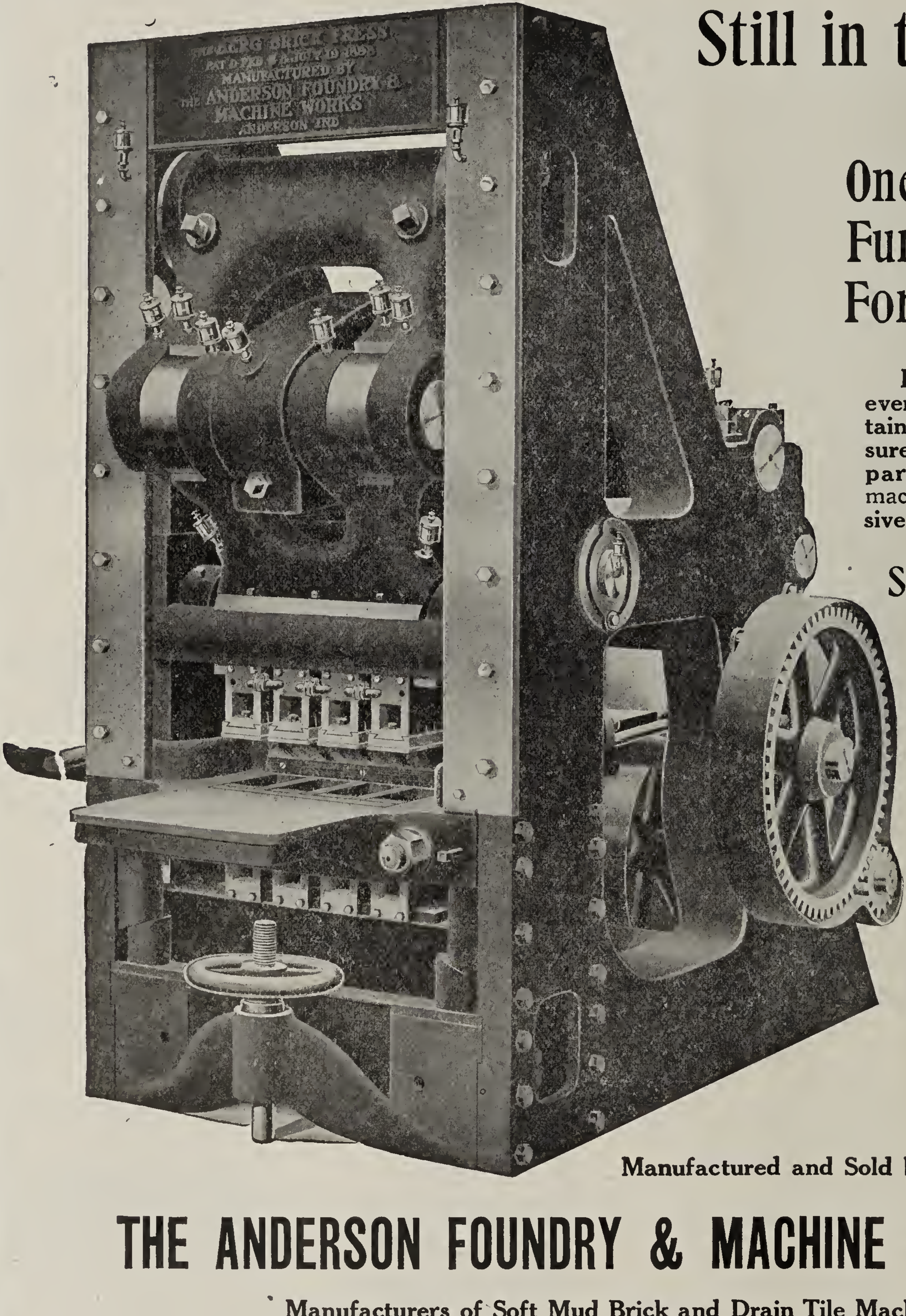
Dryer Cars.

American Clay Machinery Co.
Arbuckle & Co.
Atlas Car & Mfg. Co.
Bonnot Co., The
Chambers Bros. Co.

(Continued on Page 481)

NEW MODEL BERG BRICK PRESS

WE MANUFACTURE AND INSTALL COMPLETE PLANTS UNDER GUARANTEE FOR THE MANUFACTURE OF SAND-LIME BRICK.



Still in the Lead

and

One Step Further Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple. massive, compact and

SHIPPED IN ONE PIECE.

All Machines Are Equipped With

CUT GEARING.

Manufactured and Sold by

THE ANDERSON FOUNDRY & MACHINE WORKS

Manufacturers of Soft Mud Brick and Drain Tile Machinery

ANDERSON, IND.

Buyers Ready Reference List—Continued.

Chase Fdy. & Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Lakewood Engineering Co.
National Dry Kiln Co.
Potts & Co., C. & A.
Rodgers Engr. Co., The L. E.
Standard Dry Kiln Co., The
Steele & Sons, J. C.
Taplin-Rice-Clerkin Co.
Trautwein Dryer & Engr. Co.

Dry and Wet Pans.

American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Chisholm, Boyd & White Co.
Eagle Iron Works.
Fate Co., The J. D.
Freese & Co., E. M.
Frost Mfg. Co.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Phillips & McLaren Co.
The Stevenson Co.

Dump and Clay Cars.

American Clay Machinery Co.
Arbuckle & Co.
Atlas Car & Mfg. Co.
Bonnot Co., The
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdy. & Mfg. Co.
Eastern Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Sons, J. C.
Taplin-Rice-Clerkin Co.

Electric Instruments.

Brown Instrument Co., The
Thwing Instrument Co.
Westinghouse Elec. & Mfg. Co.

Electric Shovels.

Ball Engine Co.
Thew Automatic Shovel Co.

Electrical Furnaces.

Brown Instrument Co., The

Electrical Locomotives.

Arbuckle & Co.
Atlas Car & Mfg. Co.
Westinghouse Elec. & Mfg. Co.

Electrical Supplies.

American Clay Machinery Co.
International Clay Mach. Co.
Westinghouse Elec. & Mfg. Co.

Elevating Equipment.

(See Conveyors.)

Engines.

American Clay Machinery Co.
Arbuckle & Co.
Ball Engine Co.
Carnell, Geo.
Chambers Bros. Co.
Frost Mfg. Co.

Engineers.

American Clay Machinery Co.
Ceramic Supply & Con. Co.
Lovejoy, Ellis.
Manufacturers' Equipment Co.
The Stevenson Co.
Trautwein Dryer & Engr. Co.

Excavating Machinery.

Ball Engine Co.

Fans.

American Clay Machinery Co.
Manufacturers' Equipment Co.
Rodgers Engr. Co., The L. E.
Trautwein Dryer & Engr. Co.

Feed Water Heaters.

American Blower Co.
American Clay Machinery Co.
Arbuckle & Co.
Frost Mfg. Co.
Standard Dry Kiln Co.

Filler (Paving).

Barrett Mfg. Co.

Filter Presses.

American Clay Machinery Co.
International Clay Mach. Co.
Taplin-Rice-Clerkin Co.

Fire Brick and Fire Clay.

Parker-Russell M. & M. Co.

Flower Pot Machinery.

Baird Machinery & Mfg. Co.
Taplin-Rice-Clerkin Co.

Friction Clutch Pulleys.

(See Supplies.)

Furnaces.

Brown Instrument Co., The
International Clay Mach. Co.
Smith Co., Claude.

Gas Fire Continuous Kilns.

International Clay Mach. Co.
Manufacturers' Equipment Co.

Gears.

(See Supplies.)

Generators.

Westinghouse Elec. & Mfg. Co.

Grading Machinery.

Ball Engine Co.

Granulators.

American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machinery Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Son, J. C.
Taplin-Rice-Clerkin Co.
Wallace Mfg. Co.

Grates.

American Clay Machinery Co.
Arbuckle & Co.
Manufacturers' Equipment Co.
Marion Mach., Fdy. & Sup. Co.
Potts & Co., C. & A.
Smith Co., Claude.

Gravity Carriers.

Mathews Gravity Carrier Co.

Gravity Haulage.

American Clay Machinery Co.
The Stevenson Co.

Grouters.

Milwaukee Concrete Mixer Co.

Hand-Power Presses.

American Clay Machinery Co.
Carnell, Geo.
Fate Co., The J. D.
International Clay Mach. Co.
Lakewood Engineering Co.

Hand Winch.

(See Supplies.)

Hangers.

(See Supplies.)

Hoists.

(See Supplies.)

Hollow Brick Machinery.

American Clay Machinery Co.
Arbuckle & Co.
Bonnot Co., The
Brewer Co., H.
Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
The Stevenson Co.
Wallace Mfg. Co.

Insurance.

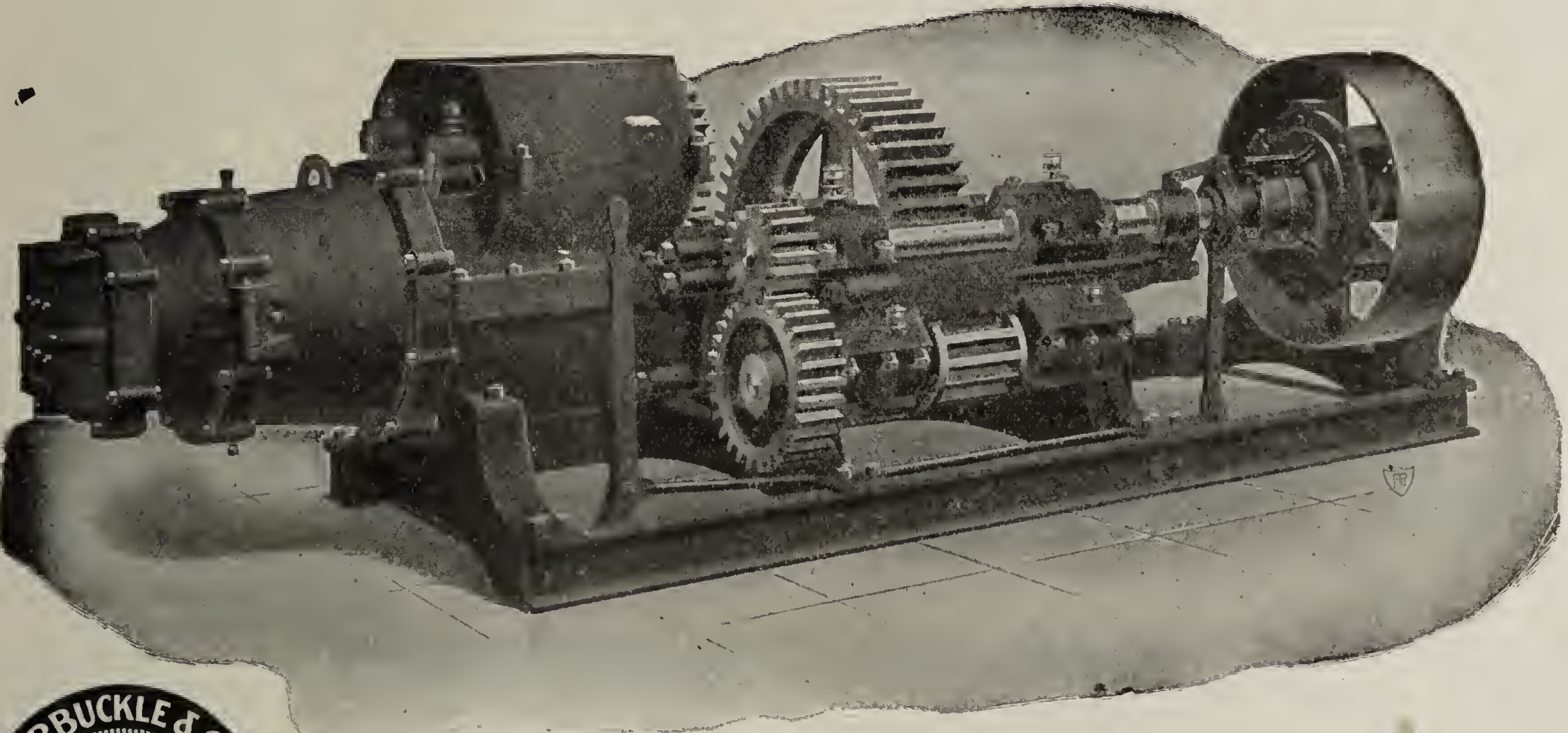
Mantel, Tile and Grate Monthly.

Investments.

Morgan & Co.

(Continued on Page 482)

If you want real service—USE THIS MACHINE. Hundreds of satisfied users. Let us tell you about this.



ARBUCKLE & CO. BUILT FOR SERVICE CLAY WORKING MACHINERY

8-E AUGER MACHINE

ARBUCKLE & COMPANY
Rushville, Ind., U.S.A.
WRITE FOR CATALOG

Buyers Ready Reference List—Continued.

Jacks.
(See Supplies.)

Kilns.
American Clay Machinery Co.
Boss Co., John C.
Didier-March Co.
Flint River Brick Co.
Hoehne, Richard B., & Co.
International Clay Mach. Co.
Klose, A.
Manufacturers' Equipment Co.
Richardson, W. D.
Smith Co., Claude.
Webster & Kincaid.
Yates, Alfred.

Kilns, Doors, Castings and Frames.
(See Supplies.)

Kiln Bands.
Caldwell, W. E. & Co.
Smith Co., Claude.

Knives.
(See Supplies.)

Locomotives.
Fate Co., The J. D.

Manganese.
(See Coloring Materials.)

Mechanical Draft.
American Clay Machinery Co.
Boss, J. C.
Manufacturers Equipment Co.
Trautwein Dryer & Engr. Co.

Mineral Paint.
(See Coloring Materials.)

Molds (Brick).
American Clay Machinery Co.
Carnell, Geo.
Eastern Brick Machinery Co.
International Clay Mach. Co.
Mentz, George B.
Potts & Co., C. & A.

Mold Sanders.
American Clay Machinery Co.
Carnell, Geo.
Eastern Brick Machinery Co.
International Clay Mach. Co.
Potts & Co., C. & A.
Wallace Mfg. Co.

Mixers.
Marsh-Capron Mfg. Co.

Mortar Colors.
(See Coloring Materials.)

Motors.
Westinghouse Elec. & Mfg. Co.

Motor Trucks.
Fate Co., The J. D.

Oil Burners.
Schurs Oil Burner Co.

Paints.
(See Coloring Materials.)

Pallets.
Lakewood Engineering Co.
Ohio Galvanizing & Mfg. Co.

Pans (Dry and Wet).
(See Dry and Wet Pans.)

Paving Brick or Block.
(See Brick.)

Perforated Sheet Metal.
Caldwell & Sons, H. W.
Harrington & King Perf. Co.

Pitch (Paving).
Barrett Mfg. Co.

Plows.
(See Scrapers.)

Portable Track.
American Clay Machinery Co.
Atlas Car & Mfg. Co.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.

Pottery Machinery.
American Clay Machinery Co.
Baird Machinery & Mfg. Co.
Fate Co., The J. D.
International Clay Mach. Co.
Taplin-Rice-Clerkin Co.

Powder.
Dupont, E. I. & DeNemours Co.

Power Plant Equipment.
American Clay Machinery Co.
Arbuckle & Co.
Rodgers Engr. Co., The L. E.
Trautwein Dryer & Engr. Co.

Presses.
(See Brick Machines, also Sewer Pipe Machinery, also Roofing Tile Machinery.)

Pug Mills.
American Clay Machinery Co.
Anderson Fdy. & Mach. Works.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Carnell, Geo.
Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Sons, J. C.
The Stevenson Co.
Toronto Foundry & Mach. Co.
Wallace Mfg. Co.

Pulleys.
(See Supplies.)

Pulverizers.
Arbuckle & Co.
American Clay Machinery Co.
American Pulverizer Co.
Fate Co., The J. D.
Manufacturers' Equipment Co.
The Stevenson Co.

Pumps.
Potts & Co., C. & A.

Pyrometers.
Brown Instrument Co.
Engelhard, Charles
Rodgers Engr. Co., The L. E.
Thwing Instrument Co., The

Rails and Railway Equipment.
American Clay Machinery Co.
Atlas Car & Mfg. Co.
Ball Engine Co.
Fate Co., The J. D.
Lakewood Engineering Co.

Rattlers (Paving Brick).
American Clay Machinery Co.
Freese & Co., E. M.
Phillips & McLaren Co.

Represses.
American Clay Machinery Co.
Arbuckle & Co.
Bonnot Co., The
Carnell, Geo.
Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Lakewood Engineering Co.
Taplin-Rice-Clerkin Co.

Revolution Indicators.
Brown Instrument Co.
Engelhard, Charles
Thwing Instrument Co.

Revolving Steam Shovels.
American Clay Machinery Co.
Ball Engine Co., The
Thew Automatic Shovel Co.

Road Graders.
Ball Engine Co.

Rock Crushers.
American Clay Machinery Co.
American Pulverizer Co.
Manufacturers' Equipment Co.
Phillips & McLaren Co.
The Stevenson Co.

Roofing Tile Machinery.
American Clay Machinery Co.
Fate Co., The J. D.
International Clay Mach. Co.

Rope.
(See Supplies.)

Rotary Dryers.
American Clay Machinery Co.
Anderson Fdy. & Mach. Works
Fate Co., The J. D.
International Clay Mach. Co.
Potts & Co., C. & A.

Sand Dryer and Sand Sieves.
American Clay Machinery Co.

Sand Lime Brick Machinery.
American Clay Machinery Co.
Anderson Fdy. & Mach. Works
Ceramic Supply & Con. Co.
Chicago Brick Machinery Co.
Chisholm, Boyd & White Co.
International Clay Mach. Co.
Lakewood Engineering Co.
The Stevenson Co.

School of Ceramics.
Illinois University.
Iowa State College.
New Jersey State school.
New York State School.
Ohio State University.

Scrapers, Plows and Clay Gatherers.
Eagle Iron Works.

Screens.
American Clay Machinery Co.
Arbuckle & Co.
Brewer & Co., H.
Bonnot Co., The
Carnell, Geo.
Chambers Bros. Co.
Dunlap Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
Harrington & King Perf. Co.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.
The Stevenson Co.

Sewer Digging Machines.
Ball Engine Co.
Thew Automatic Shovel Co.

Sewer Pipe Machinery.
American Clay Machinery Co.
Brewer & Co., H.
The Stevenson Co.
Toronto Foundry & Mach. Co.

Shale Planers.
Arbuckle & Co.

Steam Gauges.
(See Supplies.)

Steam Shovels.
American Clay Machinery Co.
Ball Engine Co.
Thew Automatic Shovel Co.

Steam Specialties.
American Clay Machinery Co.
Frost Mfg. Co.
Standard Dry Kiln Co.
Trautwein Dry & Engr. Co.

Steam Traps.
American Clay Machinery Co.
Frost Mfg. Co.
Standard Dry Kiln Co.
Trautwein Dry & Engr. Co.

Steel Pallets.
Ohio Galvanizing Co.
Lakewood Engineering Co.

Supplies.
American Clay Machinery Co.
Anderson Fdy. & Mach. Works
Atlas Car & Mfg. Co.
Arbuckle & Co.
Bonnot Co., The
Brewer & Co., H.
Caldwell & Sons, H. W.
Carnell, Geo.
Chambers Bros. Co.
Chase Fdy. & Mfg. Co.
Chicago Brick Machinery Co.
Chisholm, Boyd & White
Eastern Brick Machinery Co.
Fate Co., The F. D.
Freese & Co., E. M.
Frost Mfg. Co.
International Clay Mach. Co.
Lakewood Engineering Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
Steele & Sons
Toronto Foundry & Mach. Co.
Wallace Mfg. Co.

Switches.
American Clay Machinery Co.
Atlas Car & Mfg. Co.
Lakewood Engineering Co.

Tanks and Towers.
Caldwell, W. E., & Co.

Tempering Wheels.
Carnell, Geo.
International Clay Mach. Co.

Thermometers.
Brown Instrument Co.
Engelhard, Charles
Rodgers Engr. Co., The L. E.
Thwing Instrument Co.

Tile Machines.
American Clay Machinery Co.
Anderson Fdy. & Mach. Works
Arbuckle & Co.
Bonnot Co., H.
Brewer Co., H.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mach. Co.
Manufacturers' Equipment Co.
Potts & Co., C. & A.
The Stevenson Co.
Wallace Mfg. Co.
Wellington Machine Co.

Time Recorders.
Brown Instrument Co.
Engelhard, Charles
Thwing Instrument Co.

Tracks and Switches.
(See Rails.)

Transfer Cars and Turn Tables.
(See Supplies.)

Trench Machines.
Ball Engine Co.

Turn Tables.
American Clay Machinery Co.
Fate Co., The J. D.

Unloading Device for Pans.
American Clay Machinery Co.
Frost Mfg. Co.
International Clay Mach. Co.
Manufacturers' Equipment Co.
The Stevenson Co.

Voltmeters.
Brown Instrument Co.
Engelhard, Charles
Thwing Instrument Co.
Westinghouse Elec. & Mfg. Co.

Wattmeters.
Westinghouse Elec. & Mfg. Co.

Wheels and Axles.
(See Supplies.)

Wheelbarrows.
(See Barrows.)

Wet Pans.
(See Pans.)

Wire.
(See Cutting Wire.)

A New Era

We are on the threshold of an unprecedented period of prosperity in the building and structural industries. The influential men of to-day look forward to the near future as holding great opportunities and possibilities in this particular line of endeavor.

Prosperity for the Clay Products Manufacturers will vary in the degree of efficiency of the plant and its economical operation. The firm that employs the best methods of operation and uses the minimum amount of fuel and labor for producing the maximum amount of ware is the one that will reap the best harvest.

If you agree with that statement and wish to put your plant on the best possible basis you should investigate our kiln and its economical use of fuel. All of the users (and there are many) of the Didier-March Railroad Tunnel Kiln say it has saved them thousands of dollars, gives them better ware and more satisfactory conditions all around.

It costs you nothing to investigate.

Let us explain the merits of our kiln.

We claim it is the best kiln on the market and adaptable to the manufacture of any and every kind of clay product. It will cut your fuel bill to less than half.

DIDIER-MARCH CO., PERTH AMBOY, N. J.

Geo. A. Balz, General Manager

Contractors Manufacturers of Refractories Engineers

When Distress Calls the Red Cross Answers "HERE!"

NOW the Red Cross calls! The annual Christmas Roll Call of members will echo throughout the land the week of December 16th to 23rd.

Membership in the Red Cross now is more than duty—it is an honored privilege, and an evidence of loyalty. When that Roll is called, your conscience, your sense of right and justice, your love of country and your devotion to the highest ideals of unselfish service all suggest that you answer "HERE!"

All you need is a heart and a dollar

These entitle you to membership for one year.

When you wear your button, signifying that you are a member, you will not be asked to join again this year—it means that you have answered the Roll Call.

Join—be a Christmas member—**but just** join once.

Our soldiers and sailors look to the Red Cross for comforts. They have never been disappointed.

The Red Cross looks to you for the moral support of your membership. Answer "HERE!" when the Roll is called.

Join the Red Cross

Contributed through Division of Advertising

ADVERTISING TO VICTORY

United States Gov't Comm. on Public Information

This space contributed for the Winning of the War by

1919

Wear Your Button

Fly Your Flag

BOOKS FOR CLAYWORKERS.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

The Clayworkers' Handbook, by the Author of "The Chemistry of Clayworking." Price $2.50.

A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

Modern Brickmaking, by Alfred B. Searle. Price $7.25

It contains well-written chapters on the nature and selection of clays and other materials used, general brickmaking, the different processes, machinery, kilns, setting and burning, various products and uses, and sources of difficulty and loss.

Clays: Their Occurrence, Properties and Uses, by Heinrich Ries. Price $5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

The Effect of Heat Upon Clays, by Prof. A. V. Bleininger. Price $2.00.

A book of valuable information on burning and drying, told in a plain, practical way, and invaluable to the burner or superintendent.

Hollow Tile House, by Fred'k Squires. Price $2.50.

A book in which the reader is introduced to HOLLOW TILE in the making; how it is wrought into houses, etc., and is profusely illustrated with 215 designs.

Vitrified Paving Brick, by H. A. Wheeler, E. M. Second Edition. Price $2.00.

A review of present practice of the manufacture, testing and uses of vitrified paving brick.

Tables of Analyses of Clays, by Alfred Crossley. Third Edition. Price $2.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and abroad. A valuable book for those desiring to compare their clays with well-known and standard clays.

Engineering for Land Drainage, by C. G. Elliott. Price $2.00.

Giving instructions for laying out and constructing drains for the improvement of agricultural lands, intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvement.

Land Drainage, by J. L. Parsons. Price $1.50.

A treatise on the design and construction of open and closed drains.

Practical Farm Drainage, by C. G. Elliott. Price $1.50.

A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

Economies in Brickyard Construction and Operation, by Ellis Lovejoy, E. M. Price $1.00.

Points out economical methods for every department of the business. Is practical and covers the field thoroughly.

Drying Clay Wares, by Ellis Lovejoy, Author of Economies in Brickyard Construction and Operation, and Scumming and Efflorescence. Price, $2.00.

This is a splendid treatise covering every phase in the drying of any kind of clay ware.

Scumming and Efflorescence, by Ellis Lovejoy, E. M. Price 50 Cents.

A book of authority, giving the cause and remedy of scum and efflorescence.

Tile Underdrainage, by J. J. W. Billingsley. Price 25 Cents.

A brief treatise on the benefits of farm drainage by the "Father" of farm drainage. This is an excellent pamphlet for distributing among tile users. In lots of 100, $3.00; in lots of 1,000, $25.00.

Drying Brick, by W. D. Richardson. Price 25 Cents.

A little booklet giving and explaining the various styles of dryers, etc.

T. A. RANDALL & CO.

Indianapolis, Ind., U. S. A.

"PAVE WITH BRICK" SIGNS FREE

Be a Booster for Brick Streets and Highways.
Send for signs to tack up where dependable pavements are needed.

National Paving Brick Manufacturers Association
Will P. Blair, Secretary, Engineers' Bldg. CLEVELAND, OHIO

MEDAL

Repressed and Wire Cut Lug Paving Brick
The block with experience and service behind it.
THE MEDAL PAVING BRICK CO.
Cleveland, Ohio.

ALTON BRICK COMPANY

Makers of High Quality Brick for
Roadways and Permanent Buildings.
Repressed and Wire-Cut-Lug Block.
ALTON, ILLINOIS

PAVING BUILDING • BRICK AND BLOCK • SIDEWALK FOUNDATION

The Barr Clay Co.

C. C. BARR, Pres., Streator, Ill.

The Danville Brick Company
Manufacturers of the Unsurpassed

Danville Paving Block

Danville, Ill.
LET US QUOTE YOU PRICES.

OXBLOOD RED FRONT BRICKS
DEVONSHIRES and REPRESSED

KUSHEQUA

Highly Vitrified by Natural Gas.
Tough Paving Blocks, Beautiful in Color and Finish.
KUSHEQUA BRICK CO., Kushequa, Pa.

McAVOY VITRIFIED BRICK COMPANY

PHILADELPHIA, PA.
"McAVOY BLOCK"

PROMENADE TILE

Chocolate Red
Highest Vitrification—Lowest Absorption.
BEST BY TEST.
KUSHEQUA KERAMIC COMPANY,
Kushequa, Pa.

FIRE BRICK and FIRE CLAYS

Manufacturers of High Grade Fire Brick and Ground Fire Clays. Specially Adapted for Kiln Construction. Prompt shipments.

The Cameron Clay Products Co., Emporium, Pa.

Tile Underdrainage.

By J. J. W. Billingsley. Price 25 Cents.

A brief treatise on the benefits of farm drainage by the "Father" of farm drainage. This is an excellent pamphlet for distribution among tile users. In lots of 100, $2.50; in lots of 1,000, $20.00.

QUALITY SERVICE PRICE

The
Lake Shore Shale Brick Co.

Rough Face Builders
Wire Cut Lug Pavers
ASHTABULA - - OHIO

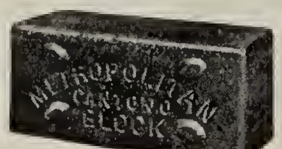
VITRIFIED PAVING BRICK

A valuable treatise on the manufacture and use of Paving Brick up to date. By H. A. Wheeler, E. M. Second edition.

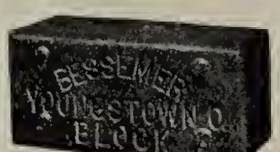
Mailed to any address on receipt of $2.00.

T. A. Randall & Co. (Inc.) Publishers
Indianapolis

Best Paving Brick Made



DAILY
CAPACITY
1,000,000
BRICK



The Metropolitan Paving Brick Co.

CANTON, OHIO

SERVICE FIRST!

IRONSTONE BLOCK

OFTEN RATTLED BUT NEVER EMBARRASSED

A BLOCK OF THE IRONSTONE QUALITY IS ECONOMY

REPRESSED OR DUNN WIRE-CUT-LUG

Terre Haute Vitrified Brick Co.
TERRE HAUTE, IND.

Murphysboro Paving Brick Company

Manufacturers of

The Celebrated

EGYPTIAN PAVING BLOCK

The Block That Stands the Test.

Prices and samples furnished
upon application.

MURPHYSBORO, ILL.

C. P. MAYER BRICK CO.
BRIDGEVILLE, PA.

The Mayer Block is guaranteed to be free from all lamination, and the company will contract for delivery on a 20% abrasion test, or better, if necessary.

PURINGTON PAVERS
ARE MADE OF

GALESBURG SHALE

PURINGTON PAVING BRICK CO.
GALESBURG, ILL.

FACTS ABOUT TILE UNDERDRAINAGE

WHAT IT WILL DO. HOW TO DO IT.

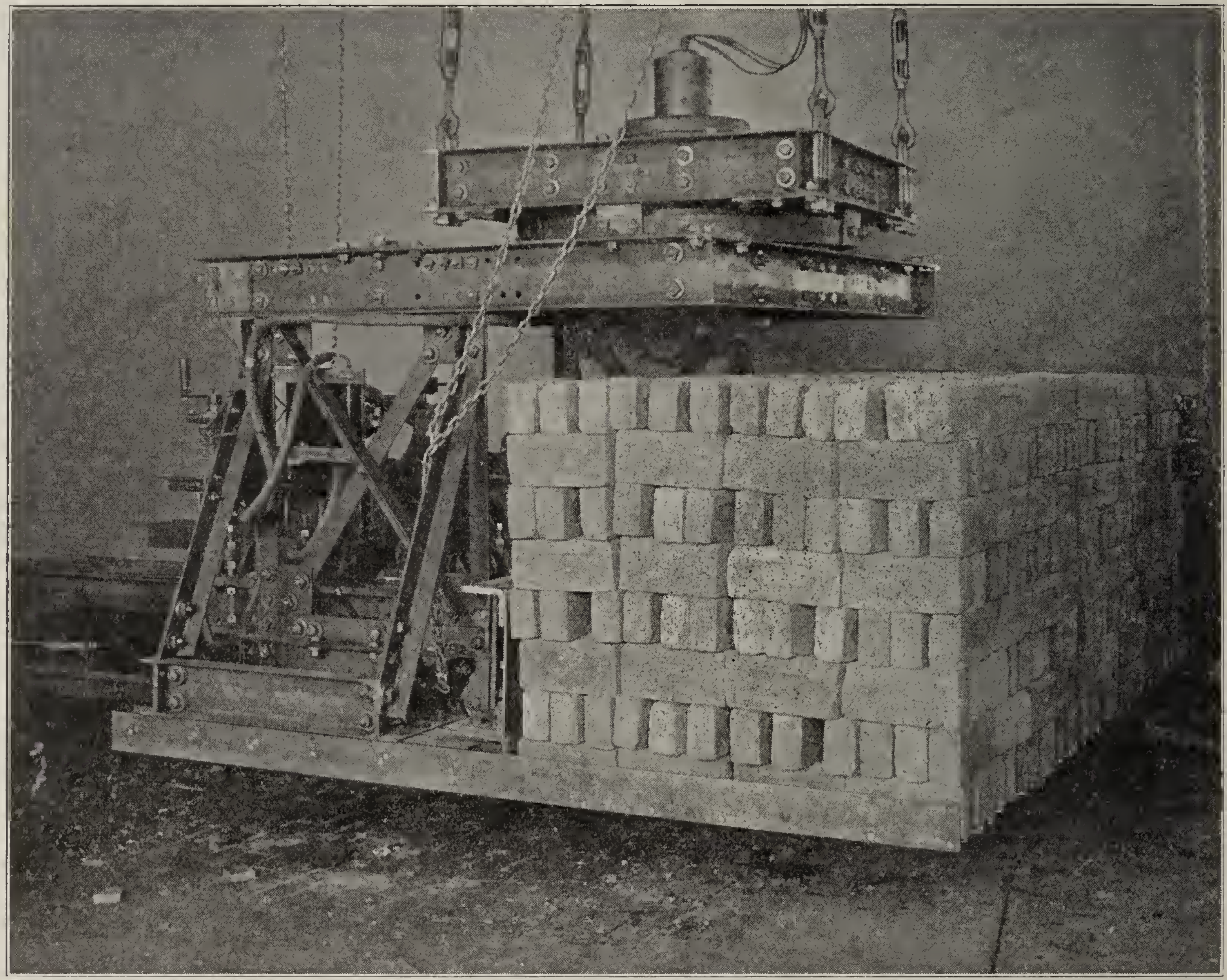
By JAMES E. RANDALL.

This is the most comprehensive pamphlet ever published on the subject, giving the many benefits and all the details relative to the installation of drain tile systems. It is printed in convenient form for mailing. A liberal distribution in your territory among prospective customers will greatly increase the demand for your product and at the same time give the farmers just what they have been looking for in regard to ways and means of putting in the drains.

Published by T. A. Randall & Co., Indianapolis, Ind. Price per 100, $5.00

This machine will set any brick that are dry enough to stand up as they pass through the dryer.

THE DICKINSON BRICK SETTING MACHINE will save you time and labor. This machine can easily be furnished for any size brick or dryer car capacity.



This photograph shows the brick raised from the dryer car by the setting machine and the car removed. This unit is now ready to be moved into position in the kiln. The uniform position of the lower course in the fingers is clearly shown at the right of the photograph.

THE DICKINSON BRICK SETTING MACHINE

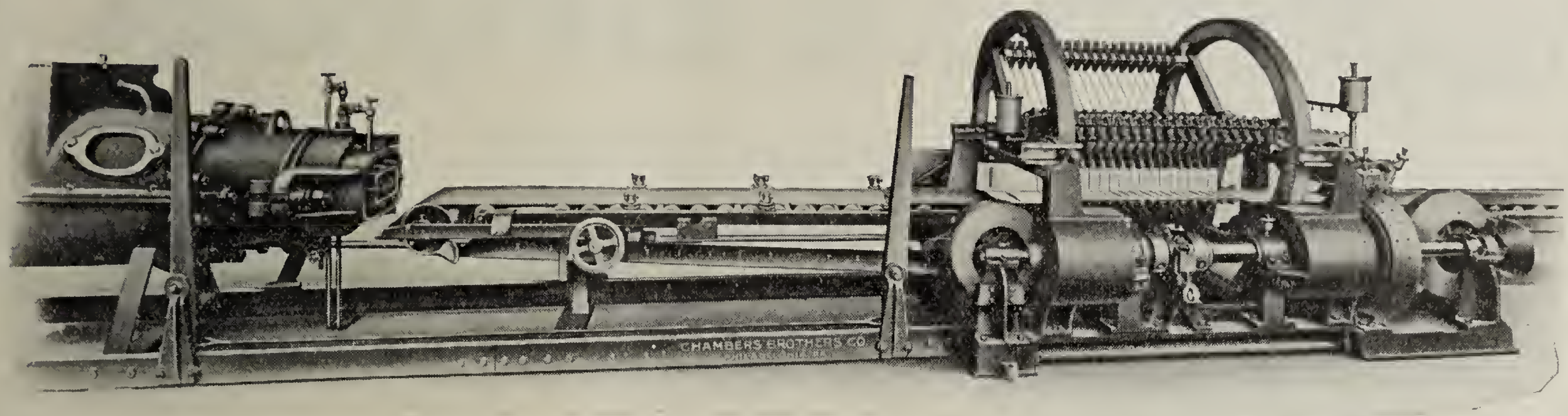
W. W. Dickinson, Jr.
1612 Battery St., Little Rock, Ark.

This machine is fully protected by patents and by additional patents pending.

The many merits of this machine can not be told in a single page. Let us send you detailed information.

Chambers Bros. Co., Philadelphia, Pa.

Clayworking Machinery Developed
Through a Careful Consideration of the Criticisms of
Experienced Brick Manufacturers.



MULTIPLE BRICK CUTTER No. 10

THE BRICK CUTTER THAT DOES NOT SWELL THE CLAY-BAR

The following representative concerns in the clayworking industry are among our customers for this particular cutter.

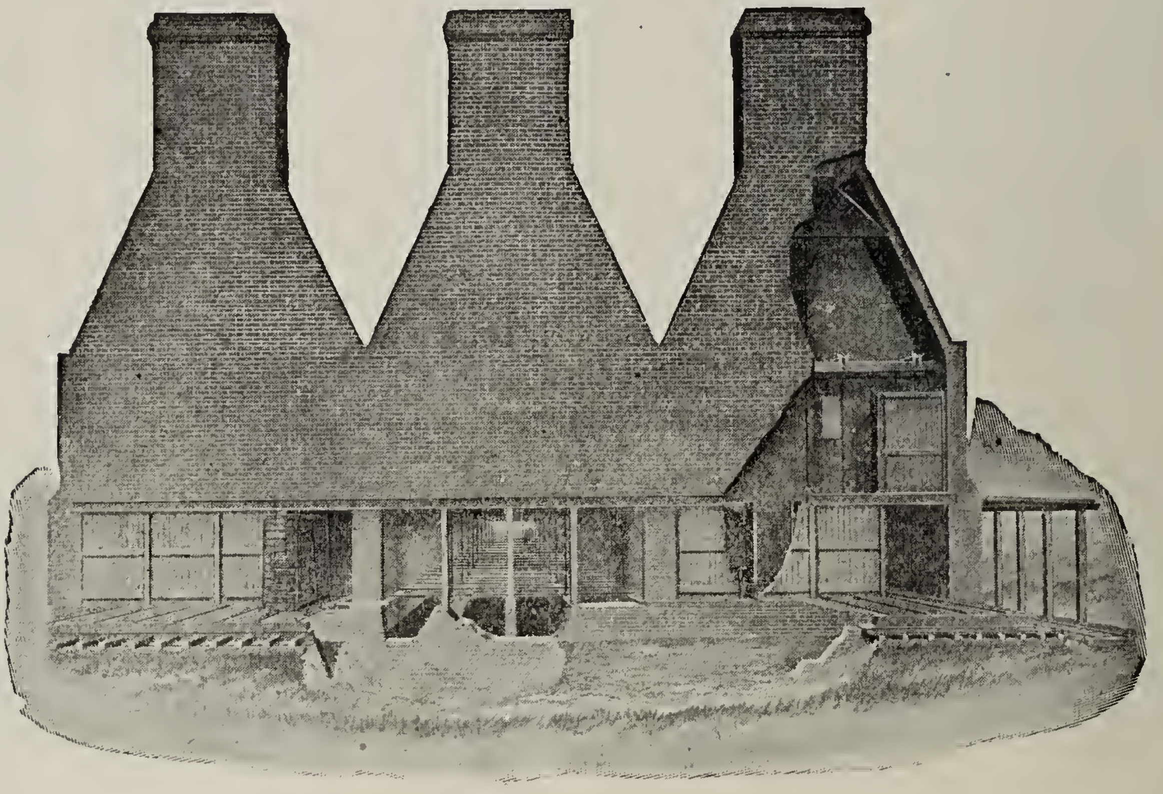
The Western Brick Co.,	Danville, Illinois
The Kier Fire Brick Co.,	Pittsburgh, Pa.
The Kittanning Brick & Fire Clay Co.,	Pittsburgh, Pa.
Sayre & Fisher Co.,	Sayreville, N. J.
W. G. Bush & Co.,	Nashville, Tenn.
Bloomsburg Brick Co.,	Bloomsburg, Pa.
The Mill Hall Brick Works	Mill Hall, Pa.
The Reynoldsville Brick & Tile Co.,	Reynoldsville, Pa.
The Excelsior Brick Co.,	Fredonia, Kan.
The El Paso Brick Co.,	El Paso, Texas
The National Fire Proofing Co.,	Port Murray Works, N. J.
Yankee Hill Brick Mfg. Co.,	Lincoln, Neb.
Darlington Clay Products Co.,	Darlington, Pa.

PEACE Means a Great Revival of Building Operations

With a Record-Breaking Demand Everywhere for BRICK

Now—right now—is the time
to equip your yard with

THE STANDARD ONE MAN BRICK DRIER



The Drier with the *Flexible* Heating System

Grab Opportunity by the forelock, Brother Brickmaker! Prepare to handle your share of the biggest demand for brick since the days of Moses and the Pharaohs.

Don't let competition beat you to it just because of superior equipment and facilities. You want your share—and while you're at it why not get a little more? You can do it with The Standard Drier. We *guarantee* quantity and quality results. Write for catalog and full information.

The Standard Dry Kiln Co.

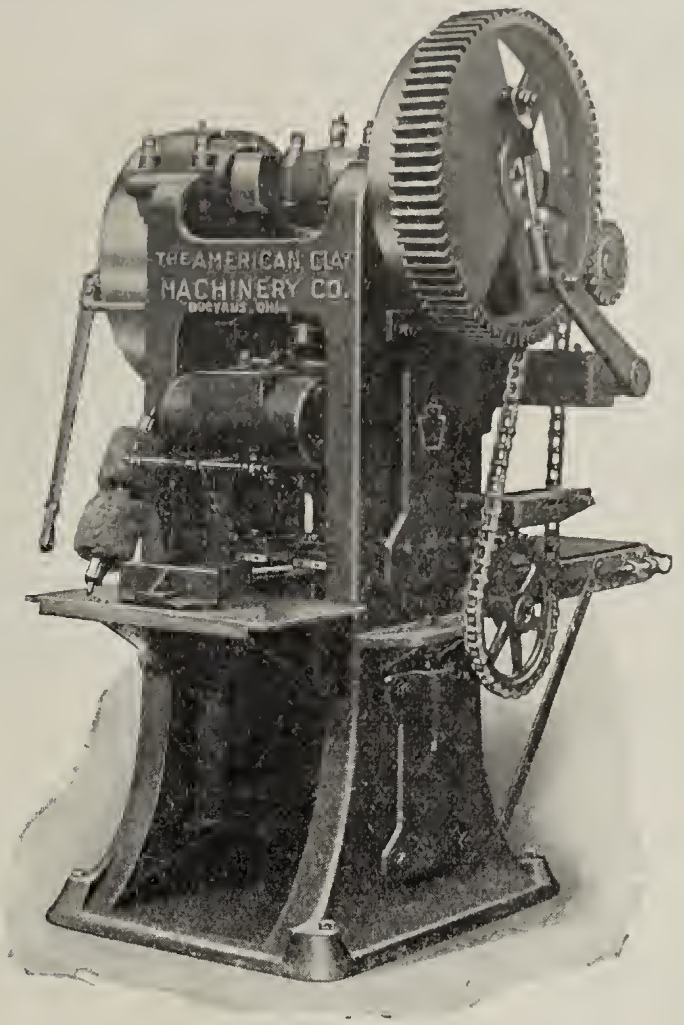
1547 McCarty St. Indianapolis, Ind.

AMERICAN HELPS FOR CLAYWORKERS

The American line of Represses are big helps for Clayworkers.

They have an excellence of construction and a superiority of design which makes them easily the best and most economical presses on the market.

The American No. 292 Repress is a model of designing, building and operation. Its days work is greater and is better performed than with other presses. Let us send you our Repress Bulletin. Free for the asking.



American No. 292 Repress

American 9 Ft. and 8 Ft. Dry Pan

AMERICAN DRY AND WET PANS.

In Pans the quality is not always determined by size and weight.

American Pans are built to do more than other pans and they make good everywhere.

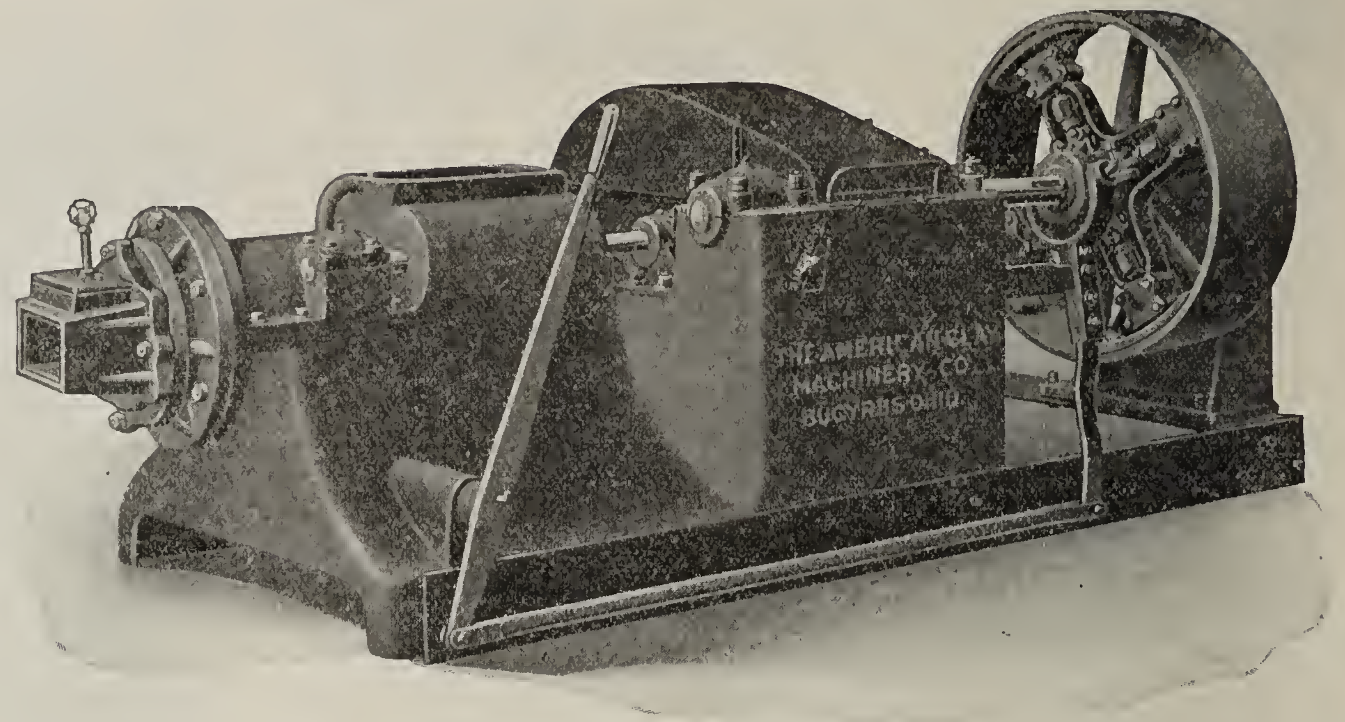
Get the record of others. Send for our Pan Bulletin.

THE AMERICAN CLAY MCHY. CO. BUCYRUS, OHIO.

Get Ready for the Big Market next year.

AMERICAN No. 281 AUGER MACHINE.

The Big
Bit in
Brick
Machinery

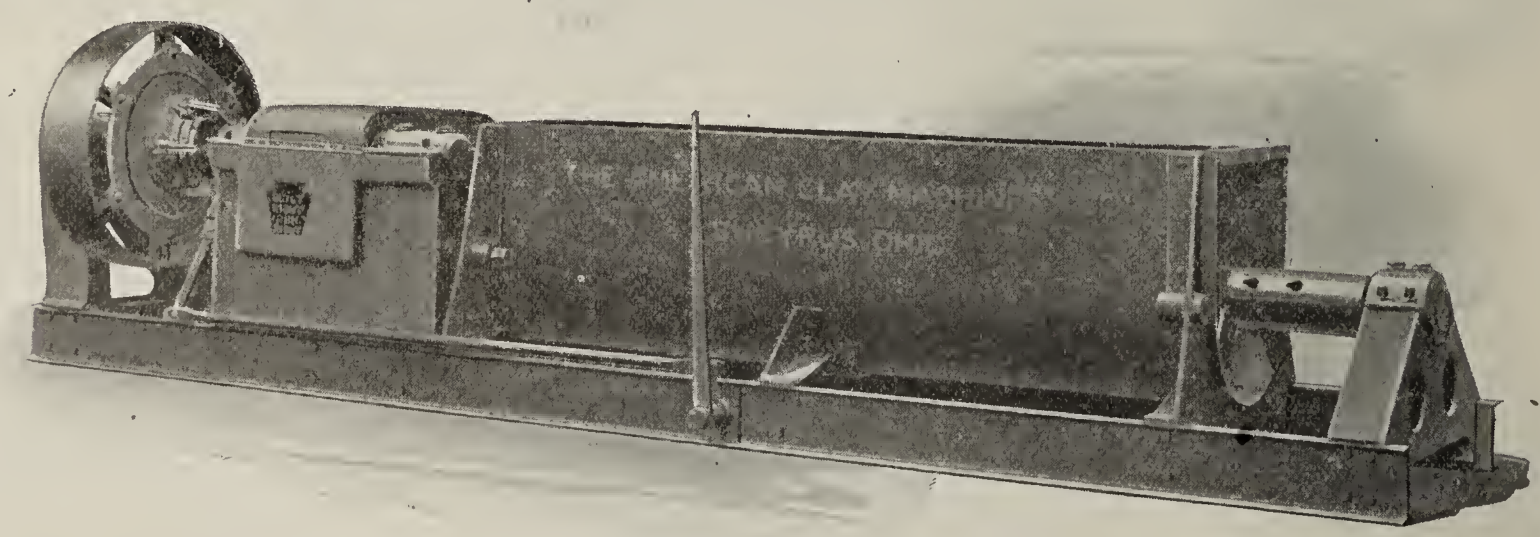


American No. 281 Auger Machine.

The American No. 281 Auger Machine is a splendid all round machine with ample capacity for producing large quantities of faultless Brick, Tile and other clay products. It's a staunch machine with simplicity features. It will run long hours on low up-keep and low power cost. Its worthy of most careful investigation as it will help you "speed up" to meet the demand which will be put upon clay products plants for the next few years.

AMERICAN No. 304 PUG MILL.

We all believe in preparedness and here is a Pug Mill that will not only properly prepare your clay but will make you prepared to meet all demands for first class product. Get Bulletin.



American No. 304 Pug Mill.

The American Clay Machinery Co.

Willoughby, Ohio

You will have to be ready for the offered business. Prepare now.

Classified Advertisements

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cents a word each insertion; about six words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

WANTED, ETC.

WANTED.

Position as superintendent by a thoroughly practical brickmaker. Address,

J. A.,

11 tf d Care Clay-Worker.

WANTED.

Second-hand double shaft pug mill and disc clay feeder. Address,

HERON LAKE BRICK & TILE CO.,

11 2 1 p Heron Lake, Minn.

WANTED.

Operator for Thew shovel. Located in the South; duties light. Address,

BOX A. V.,

12 1 d Care Clay-Worker.

WANTED.

A machinist for a brick plant. One capable of doing machine and repair work. Address,

BOX S. V. A.,

12 1 d Care Clay-Worker.

WANTED.

Head night burner for fire brick plant. State experience, last employer and wages expected. Address,

MADISON,

12 1 d Care Clay-Worker.

WANTED.

Position as business manager of a building brick or hollow tile plant, or will buy small hollow tile plant. Address,

BOX F. T. H.,

12 2 cm Care Clay-Worker.

WANTED.

Position as superintendent of brick plant, best of references with thorough experience. Address,

J. W. C.,

12 1 c Care Clay-Worker.

WANTED—An old established firm of refractories manufacturers wants a good accountant with some experience in the fire brick line. Good pay and a permanent position for the right man. Address Cost Account,

12-2-d Care The Clay-Worker.

WANTED.

To exchange a small (two or three-kiln) tile and brick plant, strictly modern, for a good 125 acre farm in northern Ohio. Address,

D. C. POSTLE,

12 1-cm R. D. No. 1, Vermillion, Ohio.

WANTED.

Position as manager or superintendent of brick plant. Thoroughly experienced and best of references. Employed, but desire change. Address,

BRICK PLANT,

12 1 c Care Clay-Worker.

WANTED.

An experienced man for superintendent of large plant manufacturing paving, face and common brick, and hollow ware. Give full details, experience and qualifications in reply. Address,

SOUTH,

12 1 d Care Clay-Worker.

WANTED—POSITION.

Ceramic glazeman with eight years' experience. Have been employed in one of the biggest tile plants. Can produce glazes, stains and bodies. Also I am familiar with all classes of kilns. Address,

GLAZES,

12 1 cm Care Clay-Worker.

WANTED.

Position as superintendent of paving brick plant. Have had thirty years of experience and am qualified to handle any proposition on a brick plant. Will be glad to get in correspondence with reliable firm. Address,

ATHENS,

12 1 cm Care Clay-Worker.

WANTED.

Position as manager or superintendent by ceramic engineer in a fire brick or silica brick plant. Long experience in kilns and burning. Am familiar also with maufacture of facing and enameled brick. Am located but desire change. Address, CERAMIC ENGINEER,

11 1 d Care Clay-Worker.

WANTED—SUPERINTENDENT.

For brick plant, making common building brick. Must have thorough knowledge of mixture of clay, stiff mud process, and how to handle colored labor. Must have mechanical ability and understand how to turn both updraft and down-draft kilns. Answer, stating age, salary expected, and experience, etc. Address, BOX N. C.,

12 3 c Care Clay-Worker.

WANTED.

Superintendent for two press sewer pipe factory located central Mississippi valley. Applicant must be steady, sober and reliable and have a thorough knowledge of all details of manufacture, including mixing and burning of clays; must have mechanical ability and be able to handle labor successfully. State age, experience and salary expected and give references. Address,

SEWER PIPE,

11 1 d Care Clay-Worker.

FOR SALE, ETC.

FOR SALE.

Two Hand throwing machine jiggers. Good condition. Address,

MICHIGAN,

12 1 d Care Clay-Worker.

FOR SALE.

One four-mold Berg Brick Press, arranged for belt drive or can be direct connected for silent chain drive. This machine has been used only a few months and is practically as good as new. Immediate shipment can be made from Danville, Ill.

American Refractories Co.,
315 Union Arcade Bldg.,
12 1 dm Pittsburgh, Pa.

BERG PRESS.

With fire brick dies.

4 Disc dry clay feeders, 42 inch.
2 Dry press mixers and steamers.
6 12 to 14 inch wide belt conveyors.
Much transmission—belts, shafting and pulleys.

Above equipment either brand new or slightly used.

MANUFACTURER.
Care Clay-Worker.

Get Bulletin 250-88 pages Bargains

ZELNICKER IN ST. LOUIS

Before Buying or selling
ELECTRIC POWER
Plant Equiment, Rails, Cars, Locomotives, Machinery, Tanks, Steel Piling

Complete

POWER PLANT

FOR SALE

2—72''x20' Boilers, 140 lbs. pressure allowed.
1—175 H. P. Ball Engine.
1—Two-stage Air Compressor, Steam Cylinders 10x10, Air Cylinders 10x16.
1—Feed Water Heaeer.
2—Pumps.
Complete piping and valves.
1—9 K. W. Generator Set.

Baumes-McDevitt Machinery Co.

Railway Exchange Building St. Louis, Mo

Classified Advertisements.

FOR SALE

FOR SALE.

A well equipped red building and paving brick plant.

LOCK HAVEN BRICK & TILE CO.,
12 1 cm Lock Haven, Pa.

FOR SALE.

One 9 foot dry pan, new, made by C. W. Raymond Co., No. D. P. 300.

BARNET S. OSER,
10 3 cm Penn Argyl, Pa.

FOR SALE.

One soft-mud, all steel Pott's machine, in absolutely first class condition, never having been used.

WESTERN BRICK CO.,
12 1 d Danville, Ind.

FIRE CLAY FOR SALE.

A basic clay, no grit, no iron, no lime, high in alumina and silica. Suitable for use in the manufacture of tile, pottery, face brick, terra cotta, vitrified brick, floor and wall tile. Address MANN,
10 3 d Care Clay-Worker.

FOR SALE.

Three slat pallet boards, 10½ by 34 inches. Good condition. Description cheerfully given.

P. M. FERGUSON,
R. R. No. 1, Oakland City, Ind.
12 1 cm

FOR SALE.

Progressive Brickmaker—Attention.

The Villeroy Railroad Tunnel Kiln is the most practical and economical for the burning of any kind of clay products. To introduce this superior kiln, have decided to dispose of a few complete sets of blue prints, shop rights included, for the nominal sum of $20.00.

THE VILLEROY KILN CO.
3730 Delmar B'lvd., St. Louis, Mo.
11 1 cm

FOR SALE.

Modern brick and tile plant, thoroughly equipped. Two kilns, 100 h.p. Corliss engine and boiler, modern manufacturing room, steam dryer, 165 car capacity. Clay to operate 4 kiln plant next 25 years, more available. R. R. switch in yard. Coal yard in connection, if desired. Plant a proven success, but improved with borrowed money which must be paid at once. Will sell all or part at a right place. Write

PERCY ENGLE,
10 2 d Newton, Iowa.

FOR SALE.

A five-kiln tile plant, located in the best agricultural district in southeastern Indiana. The plant is well equipped, modern and up to date. Address,

TILE PLANT,
6 tf d Care Clay-Worker.

FOR SALE—AT A BARGAIN.

Clay plant, located on railroad with fifty acres of extra good clay ten feet deep. Suitable for drain tile, building brick and other clay goods. Capacity, one 24-foot round down-draft kiln. Satisfactory reason for offering for sale.

M. W. MAYES,
12 1 cm Summerville, S. C.

FOR SALE.

One Brewer ten A brick machine, tile attachment. One Bonnot brick machine No. 15, fitted for triple stream. Both with Brewer cutting tables. Machines fully equipped with off-bearing belts. In A1 condition and will sell or trade for machine and cutting table of larger capacity. Also No. 1 Thew traction shovel, horizontal crowding motion and one-yard dipper. Want larger shovel with longer reach. Address,

IOWA,
12 1 d Care Clay-Worker.

FOR SALE.

Good used equipment available for immediate shipment, in excellent condition.

1 125 h. p. locomotive type boiler, complete with trimmings and stack.
1 150 h. p. Russell right hand automatic side crank engine with lubricators, oil and grease cups, steam separator, etc.
1 7 x 4½ x 8 Advance duplex steam pump.
1 9 foot Bonnot dry pan with friction belt pulley and belt elevator.

NATIONAL PRODUCTS CO.,
11 2 dm East Liverpool, Ohio.

FOR SALE.

1 7 ft. dry pan, with friction clutch pulley.
1 No. 1 Giant auger machine.
1 New casing, auger and extra set knives.
1 Lubricating brick die side cut, in first class condition.
1 No. 3 pug mill, some worn, American Clay Machinery Co. make.
1 Bonnot two mold repress, good as new.

TABLE ROCK BRICK & MATERIAL COMPANY,
11 2 c Table Rock, Neb.

NEW MACHINERY.

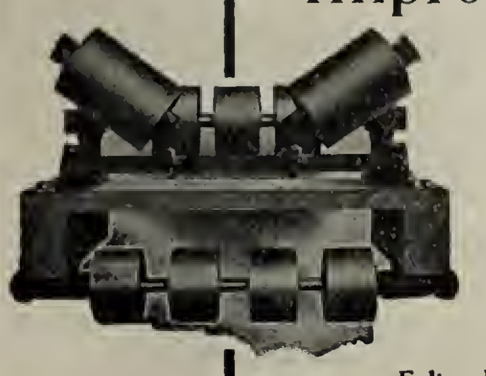
BOILER—Horizontal return tubular 72x16, 125 h.p. with approximately 60 ft. steel stack.
ENGINE—Heavy duty automatic, 12x16, 100 h.p.
FAN—Venture, 8 ft., with double ringed self-oiling and self-aligning bearings.
ENGINE—For fan, 3¼x3.
SHAFTING—18 ft. 3 7-16 in. line, with 3 pillow blocks, 2 sets collars.
PULLEYS—
38 in. diam. x 16 in. face.
40 in. diam. x 10 in. face.
24 in. diam. x 6 in. face.
10 in. diam. x 6 in. face.
12 in. diam. x 10 in. face.
58 in. diam. x 16 in. face.
BELTING—
149 ft. 16 in. six-ply canvas.
86 ft. 10 in. five-ply canvas.
92 ft. 6 in. five-ply canvas.
100 ft. 4 in. five-ply canvas.
RAIL—3 tons, 12 lbs., with splice plates and spikes.
BRICK MACHINES—
1 Special Imperial, combined double pug shaft, brick, tile and hollow ware machine with part semi-steel and part steel gears, machine cut from solid blanks, with Fate Special heavy duty all metal friction clutch pulley.
1 side-cut lubricating brick die, complete with case.
1 automatic side-cut brick table, with automatic delivery belt, arranged 8 ft. longer than standard, all necessary shafting, couplings and attachments for driving cutting table and off-bearing belt from Special Imperial machine. Designed to cut brick 2⅝ in. thick.
1 No. 1 heavy duty clay disintegrator with fast roll equipped with tool steel knives and all pulleys.
1 wet clay granulator and feeder with mitre gear drive, the extended pulley shaft to conform with plan of plant, hopper of special type so wooden storage bin can be built above.
1 Standard self-contained winding drum with pulley.
200 ft. of ⅜ in. Swedish hoisting cable for winding drum.
Two (2) bottom dump cars.
One (1) double track transfer car.
One (1) single track transfer car.
Six (6) wheel barrows for brick.
Fifty (50) single deck roller bearing dryer cars, 24 in. gauge.
PIPE—Lot of 1 in. and 1¼ in. pipe.

All machinery at Richmond, Va.

Address all inquiries to

RAPPAHANNOCK LAND & DEVELOPMENT CORPORATION,
29th & P Sts. Richmond, Va.
10 3 cm

Classified Advertisements.



Improved Belt Conveyors

For carrying all kinds of material, gritty and otherwise. Gradual, uniform curve of belt secured without complicated parts.

Bearings thoroughly lubricated and *dust-proof*. Economy and satisfaction—nothing to get out of order.

We manufacture Complete Handling Equipments.

H. W. CALDWELL & SON CO.

Western Ave., 17th-18th Sts., CHICAGO
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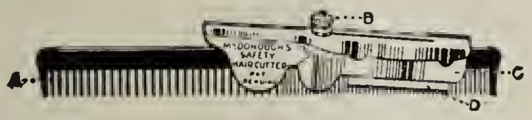
A Useful Christmas Present for every Boy in the Service

Kleen-Kut Hair Trimmer Complete with Extra Blades $2.00



THE advent of Kleen-Kut Hair Trimmers makes it possible and practical for man to trim his own hair. Just think for a minute what this means to the busy man, no more barber shop waits, expense or inconvenience.

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PHILLIPS & McLAREN CO.

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Pittsburgh Standard
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Sand, Cement, Ore,
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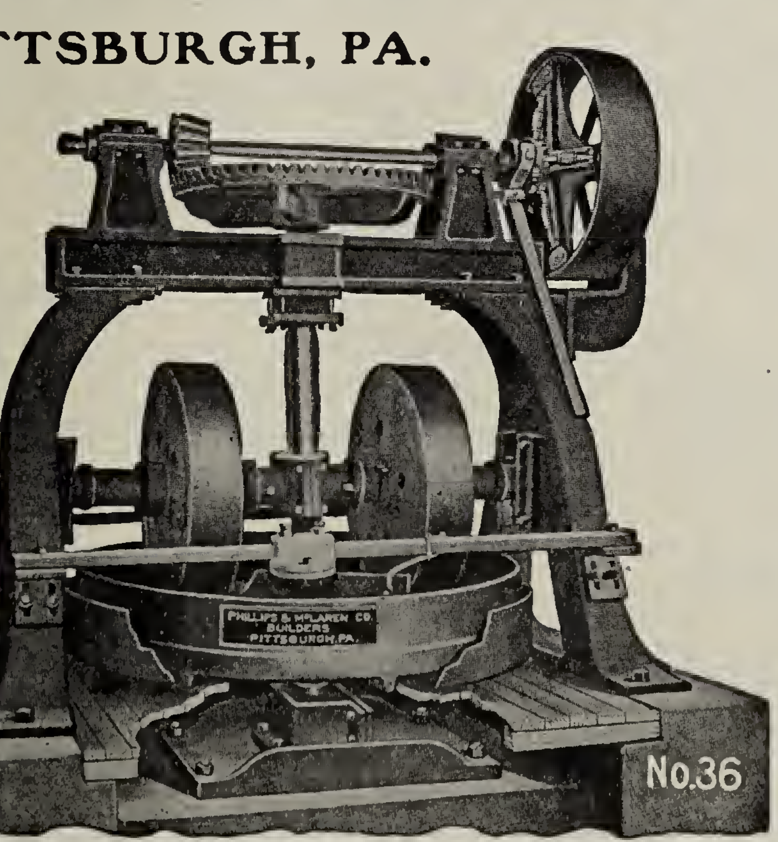

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For Mortar Cement and Brick.

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PREVENT SCUMMING
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COLORS and OXIDES
for
Brick, Terra Cotta
Tile, Clay Products
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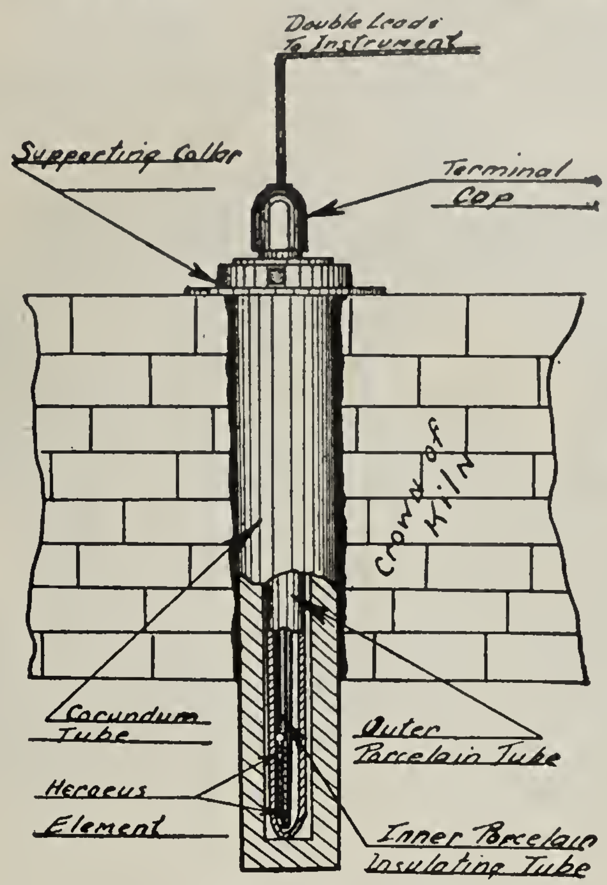

Users are our Best Salesmen. Let us refer you to some who have them.

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PLACE A SMALL AD IN THE CLAY-WORKER.

You will be surprised how quickly you will make the sale or the purchase.

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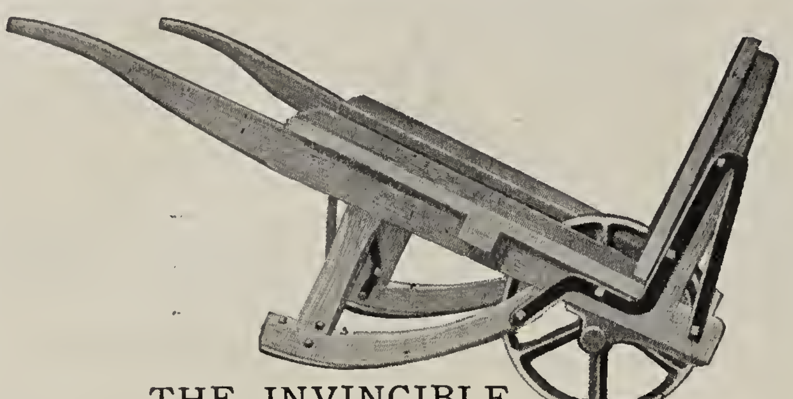

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Our brick barrow has been conceded to be the best on the market today. It is built of seasoned oak; has bent wood runners, wrought iron braces throughout, cast iron slide shoes and cast iron babbitted bearings.

All parts are renewable and carried in stock.

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Toronto, Ohio

Result of 20 Years' Burning Experience

Geijsbeek Perfection Kiln

Most Uniform Burning Kiln on the Market.

Saves fuel, saves waste, saves labor.

Makes output first grade product.

Eliminates soft burns and seconds.

Adapted for any kind of Clay product, in round, square or continuous kilns.

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Here is a book every business concern should have on hand for reference and enlightenment regarding the various laws affecting and governing business. This volume of 933 pages contains all the federal laws together with a handy index for locating any specific law without any loss of time.

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- Tariff
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All the important Federal Laws are published in this book. To purchasers of the book there will be sent without charge a supplement issued at the close of the present session of Congress.

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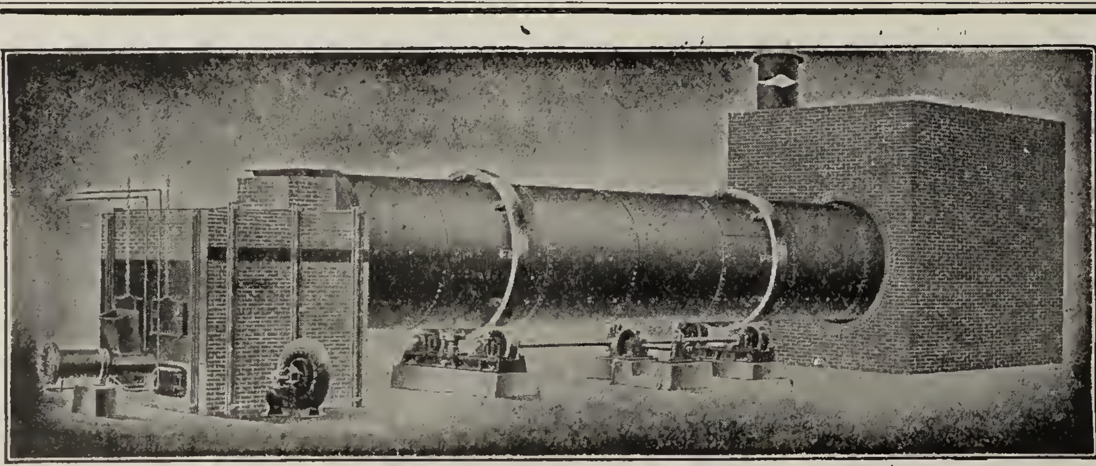

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"MATERIAL CARRIED IN STOCK FOR STANDARD SIZES."

DRY YOUR CLAY

AT LOW COST

YOU CAN THEN OPERATE IN ANY
WEATHER OR SEASON

It Assures Uniform Product

YOU CAN THEN SCREEN TO ELIMINATE
PEBBLES, ETC.

American Process Co.
68 Williams Street
NEW YORK

"Thwing Pyrometers Are the Best Investment We Ever Made"

That is what the Heinz Roofing Tile Company of Denver, Colo., told us after using the Thwing System for over two years in the burning of down-draft kilns for roofing tiles.

Commenting further, these people tell us:

"We do not dread the day for burning kilns any more. We simply show a man how to fire and then ask him to watch the pyrometer.

"We put in our thermocouples very carefully, and they are still in the kilns, never having been removed. Furthermore, we have not paid a single cent for maintenance.

"The use of Thwing Pyrometers has enabled us to cut the time of burning from 72 to 59 hours, to save about one-third on fuel and burn the kilns evener.

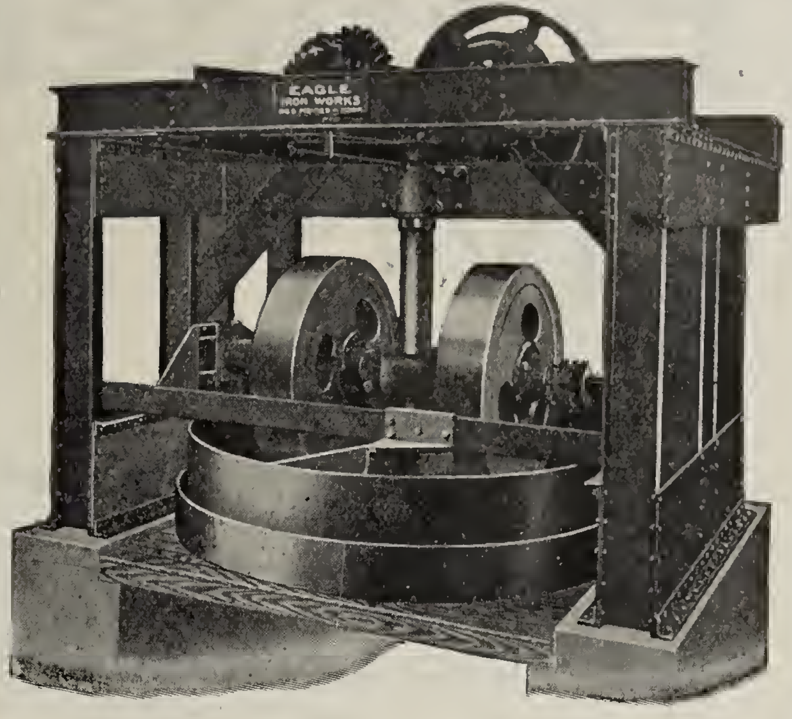
"If we knew ours was the last pyrometer on earth we would not take $5,000 for it."

Thwing pyrometers easily repay their cost. Let us submit data. 21

Housing for the Thwing Pyrometer on a Brick Kiln.

Thwing Instrument Co.
Lancaster Ave. and Cuthbert St., Philadelphia, Pa.

A New Candidate for Favor! Right in Every Way!



The 8 Foot Steel Frame Dry Pan

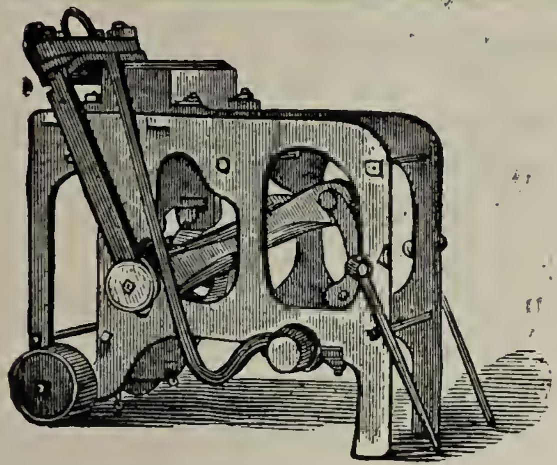
Built by the

EAGLE IRON WORKS
Des Moines, - Iowa

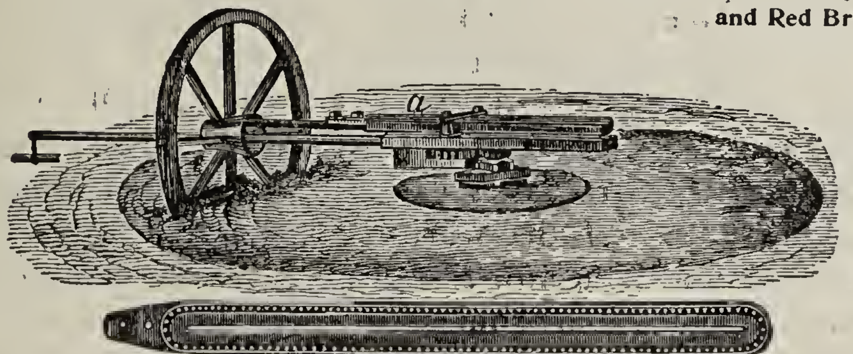
Philadelphia Brick Machine Works.

Fire and Red Brick Presses All Sizes. Machinists and Engineers.

Manufacturer of All Kinds of Machinery Used in the Manufacture of Fire and Red Brick.



RED BRICK PRESS.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

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"OHIO" ROLLED EDGE STEEL BRICK PALLET

Style No. 8. For Rack Cars
(Patented)

Made from No. 13, 14, 16 or 18 Gauge Steel. ⅝-inch Roll running full length and across ends. Either Galvanized or Black Steel. The lightest, strongest and most rigid Pallet made.

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President Wilson says:

(in a letter written from the White House under date of September 16th)

"It was one of the most remarkable and one of the most satisfactory portrayals that we had seen of the great task which America has performed with such enthusiasm and in a fashion which cannot leave the results in doubt."

You have *read* about the war. You have *thought* about the war—and *talked* about it. You have cheered the boys who left your town to serve Uncle Sam.

Now you are going to *see* the war—as clearly as if you were over there yourself. You are going to understand America's part in the war, as no amount of reading, thinking, talking or cheering can possibly make you understand it!

"America's Answer" takes you right into the heart of the world conflict, and shows you how these American boys, we are so proud of, are helping to wipe out the cruel canker that is eating into the vitals of mankind.

The war becomes a real issue—the "official reports" in the newspapers are suddenly translated into actions that lift you bodily from your seat and make you cheer yourself hoarse.

You women who have men folks in France will specially welcome this opportunity to see "America's Answer." A Washington woman spoke for all the women of this nation when she said, "If they only would stop long enough for one to scan the faces, I feel sure that I would see my boy."

"America's Answer" is the greatest war picture ever shown on the screen. You can't afford to miss it.

Insist on seeing

"America's Answer"

at your favorite theatre

Available to all exhibitors through World Film Corporation Branches

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Division of Films, Charles S. Hart, Director, Washington, D. C.

Official Seal
of the People's Films

The War Ends - Reconstruction Begins.

There is a bright promise of great activity in the building industries next Spring.

Now is the time to make a survey of the factory and put it in shape to take advantage of the prosperous times that are coming to our very essential peace industry.

Ellis Lovejoy, E. M.
Consulting Engineer,
Columbus, Ohio.

Less Coal
Larger Production
Less Labor
Easier Operated

WEBSTER KILN

Continuous Down Draft
Continuous Muffle

Reasons Why You Should Use Our Kiln

1. Cost of Construction less than ordinary rectangular, down draft kiln.
2. The Kiln can be burned with top firing only, for ordinary ware and down draft with side furnaces only, or as open top kiln.
3. Any kind of fuel can be used in down draft burning.
4. Every ounce of fuel is utilized.
5. All heat generated is used over again under direct control of the burner.
6. Great saving in time required in the filling, emptying and cooling.
7. The ware is dried in the kiln, eliminating drier.
8. Additional units can be added as required for increase in capacity at little expense.
9. Our kiln of twelve units will burn as much ware as a battery of eighteen down draft kilns.
10. The cost of operation is one third the present cost of operating ordinary down draft kilns.

We Guarantee Results.

Write for Catalog.

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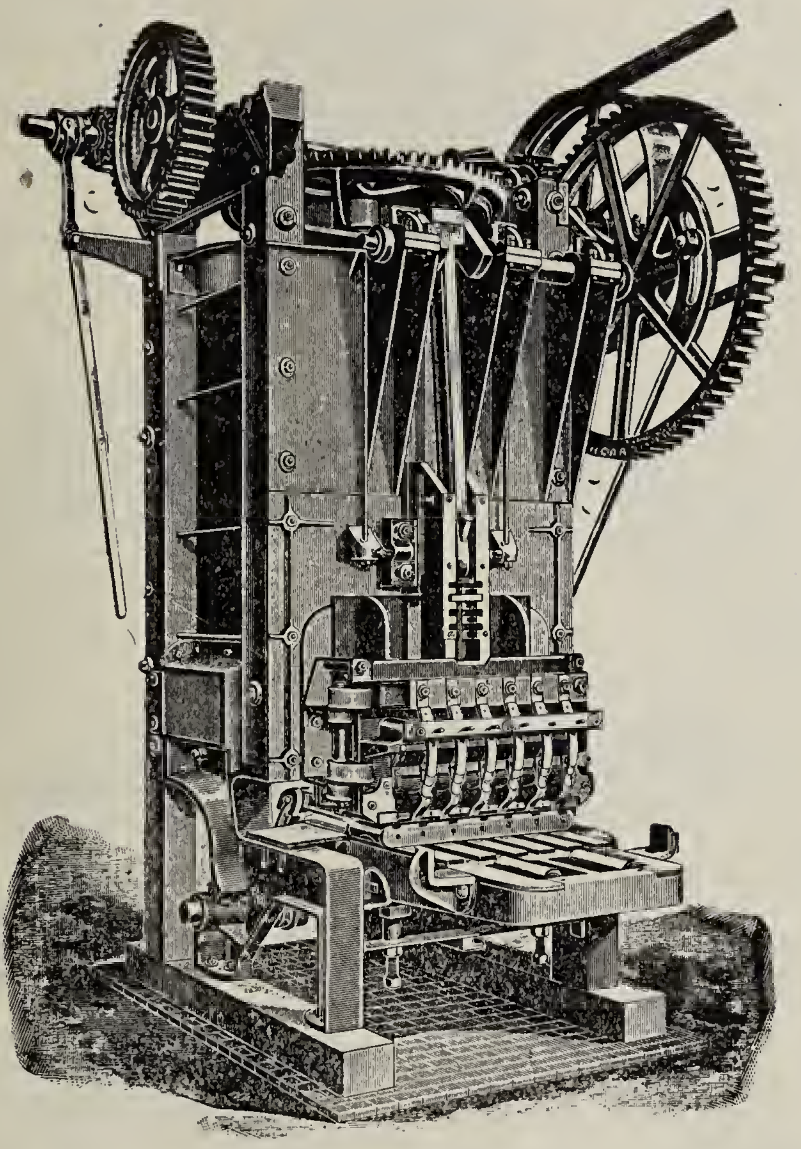

"NEW HAVEN" VERTICAL BRICK MACHINE.

Because of their simplicity, unusual strength and excellent construction, "New Haven" Vertical Brick Machines are seldom out of repair, and hence earn more and are much more valuable to their owners than the light weight affairs that break so often. They do better work than is possible with less powerful machines. It will pay any prospective buyer to think seriously about the matter of earning capacity, and look into the merits of the "New Haven" Machine from that point of view.

The EASTERN MACHINERY CO.

NEW HAVEN, CONN.

Drying Clay Wares

By Ellis Lovejoy.

Author of

Economies in Brickyard Construction and Operation.

Scumming and Efflorescence.

TABLE OF CONTENTS

CHAPTER I. Page

Classification of Clays.... 7
Water in Clay.... 8
How Drying Proceeds.... 9

CHAPTER II.

The Work to Be Done.... 12

CHAPTER III.

The Relation of Air to Drying.... 16
Effect of Lamination on Drying.... 19
Grog.... 20
Preheating Clay.... 21

CHAPTER IV.

Shrinkage.... 23

CHAPTER V.

Air Drying.... 33
Open Yard Drying of Soft Mud Brick.... 33
Stiff Mud Brick in Open Yard.... 36
Rack and Pallet Yard.... 36
Air Drying Stiff Mud Brick.... 41
Drain Tile Sheds.... 43

CHAPTER VI.

Drying Above Continuous Kilns.... 44
Advantages.... 61
Disadvantages.... 61

CHAPTER VII.

Artificial Dryers.... 62
General Principles.... 64
Floor Dryers—Hot Floor.... 65

CHAPTER VIII.

Sewer Pipe Floors.... 62

CHAPTER IX.

Periodical Dryers.... 78
Steam Pipe Dryers.... 78
The Boss Dryer....103
The Pipe Rack Dryer....105
Tender Clay Dryer....107

CHAPTER X.

Pottery Dryer....110

CHAPTER XI.

Terra Cotta and Other Special Dryers....115
The Scott System....118
Car Tunnel Kilns....120

CHAPTER XII.

Conservation of Heat in German Factories....124
Moeller and Pfieffer Dryer....127

CHAPTER XIII.

Progressive Dryers....130

CHAPTER XIV.

Radiated Heat Dryers....133

CHAPTER XV.

Steam Progressive Dryers....141

CHAPTER XVI.

Waste Heat Progressive Dryer....145
Air Volume of Heat Requirement for Waste Heat Dryers....154
Another Method of Determining Air Volume....159

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Your library of ceramic literature is not complete without

DRYING CLAY WARES.

This splendid treatise covers every phase in the drying of any kind of clay ware.

It is the most valuable book of all our ceramic literature.

It is so terse and simple in its diction that it does not require a second reading to get the meaning.

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Get Ready for Big Business. Purchase machinery from us and you will always be SATISFIED, as all machinery manufactured by us (C. & A. Potts & Co.) is guaranteed.

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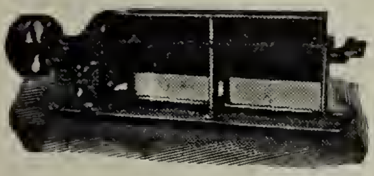
Style "A" and "P" Disintegrator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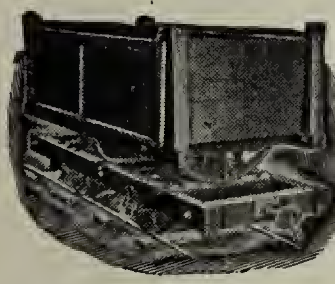
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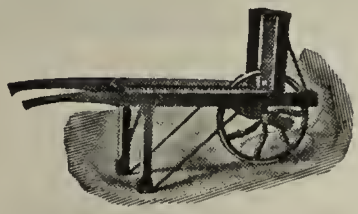
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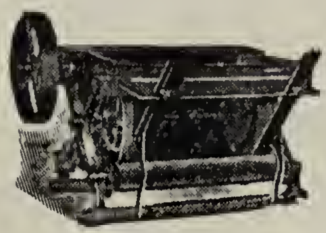
Double Deck Truck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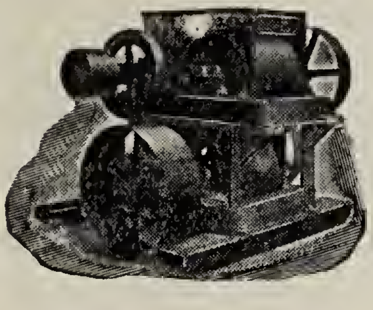
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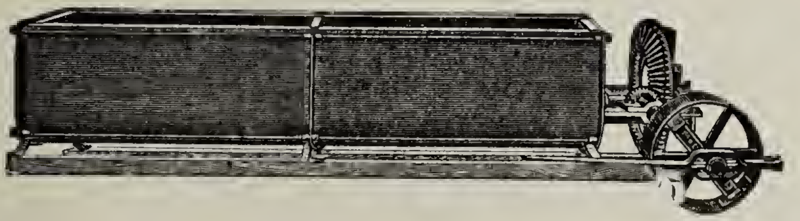
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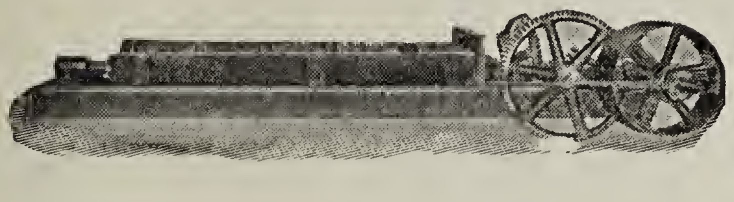
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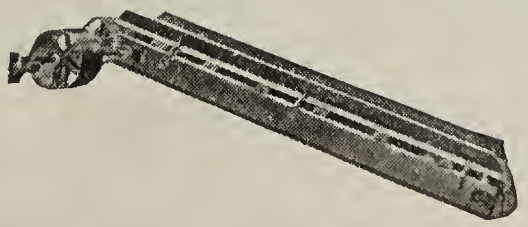
The Potts Rocker Grate
For any size fire box
on boiler or kilns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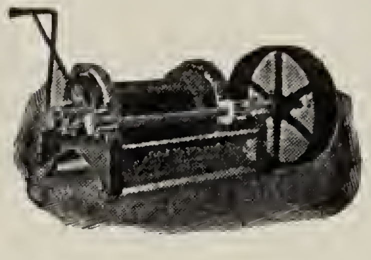
Style "P" Roller-Crusher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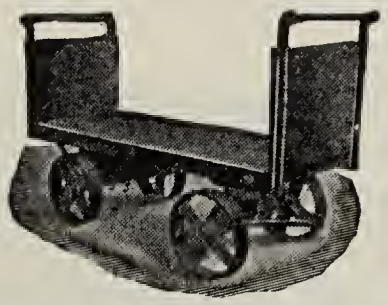
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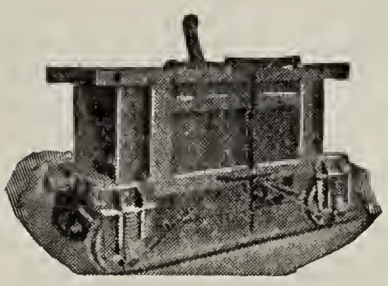
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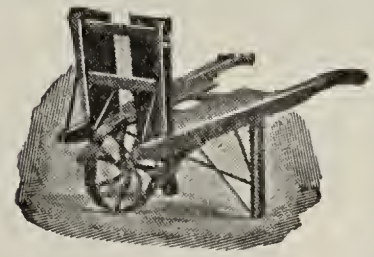
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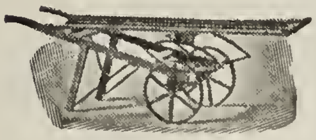

Single Deck Truck

C. & A. POTTS & CO.

INDIANAPOLIS, IND.

Write us for Prices

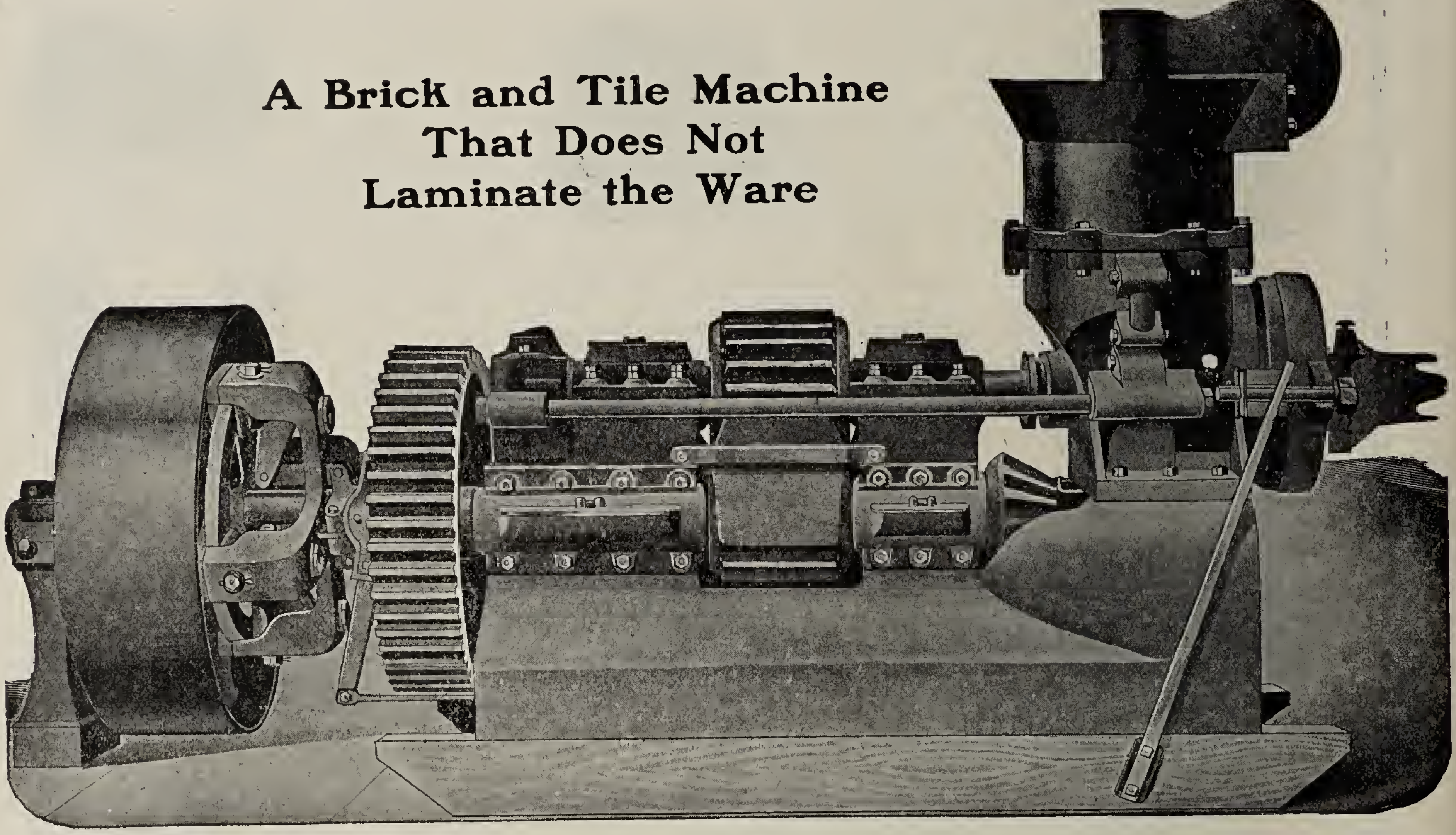
If it's to be Had We Have it

TURN FAILURE INTO SUCCESS

With the Wonder Machine

A Machine of Large Capacity. Unequaled in Record of Durability

**A Brick and Tile Machine
That Does Not
Laminate the Ware**



The Big Wonder Brick and Tile Machine

We also make Side=Cut Brick Cutters, Clay Crushers, Dry Pans, Disintegrators, Pug Mills, Granulators and Corrugated and Smooth Roll Crushers.

Write for Catalog and Prices.

THE WALLACE MFG. CO.

FRANKFORT, IND.

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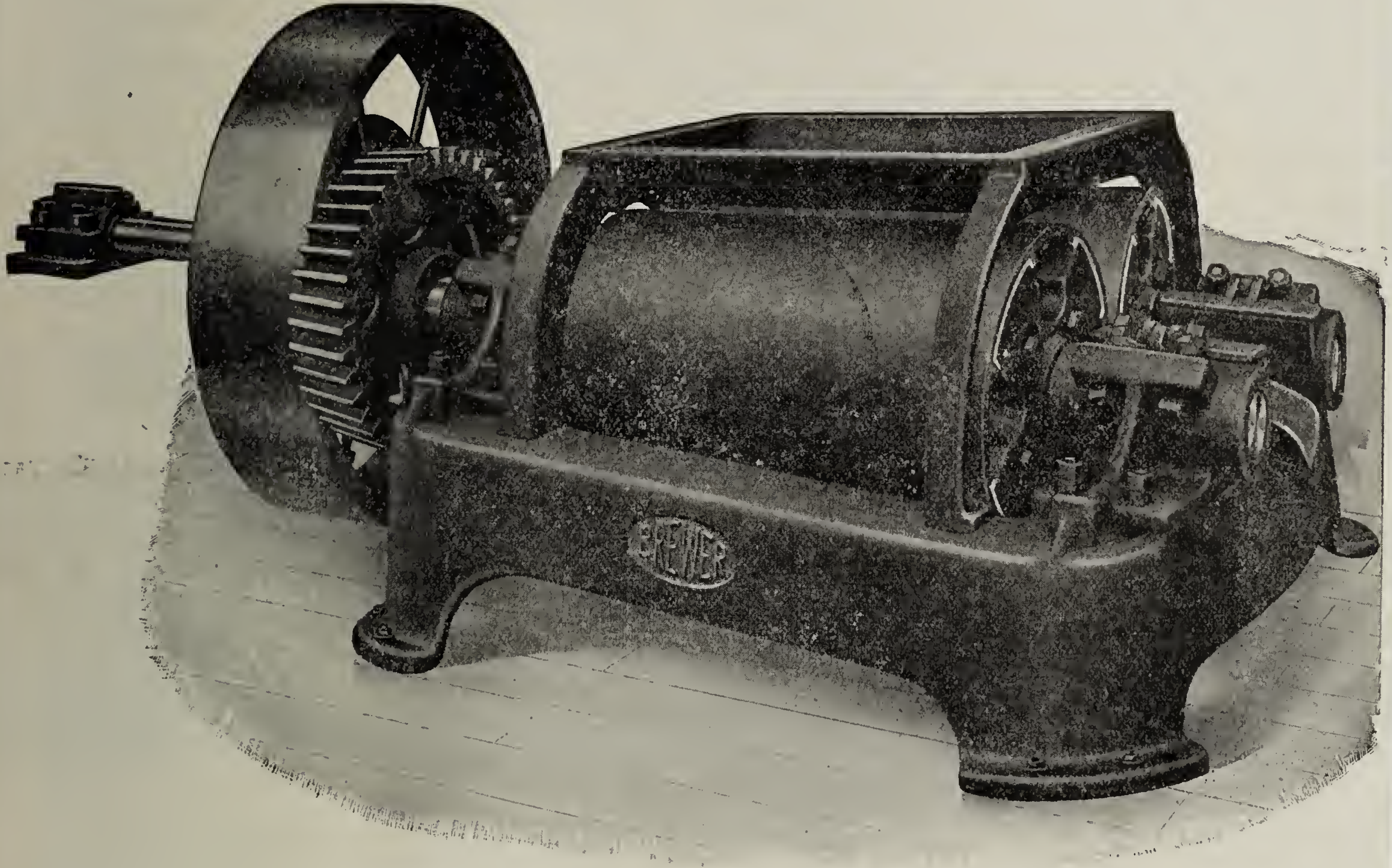
CLAY CRUSHERS

We make a specialty of Crushers. We build all kinds and sizes—Conical, Straight, and Beaded Roll Crushers, Compound Crushers, Disintegrators and Dry Pans.

We make the rolls with removable shells and we make the shells of a special hard and durable material, which compared on a basis of cost, outwears manganese steel or anything else.



But Crushers are only a small part of our line—we also build

Brick Machines, Drain Tile Machines, Automatic Cutters, Pug Mills, Granulators, Hoists, Conveyors, Etc.

GET OUR COMPLETE CATALOG.

H. BREWER & CO. BREWER **Tecumseh, Mich.**

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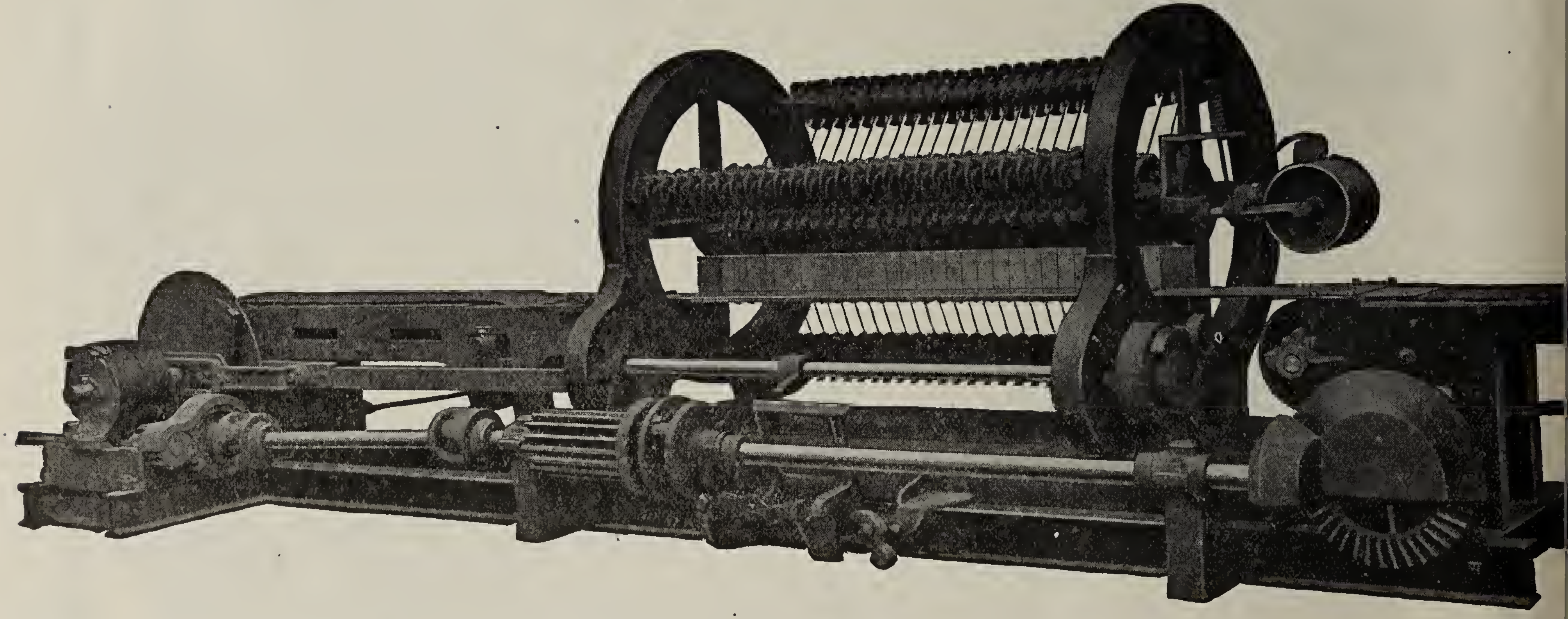
No machine is so important to you—financially—as your automatic cutter—

For it not only controls the ***quality*** of your product, but also determines the actual ***capacity*** of your brick machine—the percentage of clay column turned into brick and the percentage returned to the pug mill.

This is why the Freese Cutter, with its ability to produce—continuously—perfectly straight true brick, has proven a good investment to several hundred Brickmakers.



Model C30 Rotating Automatic Cutter
The Dependable Cutter

E. M. FREESE & COMPANY

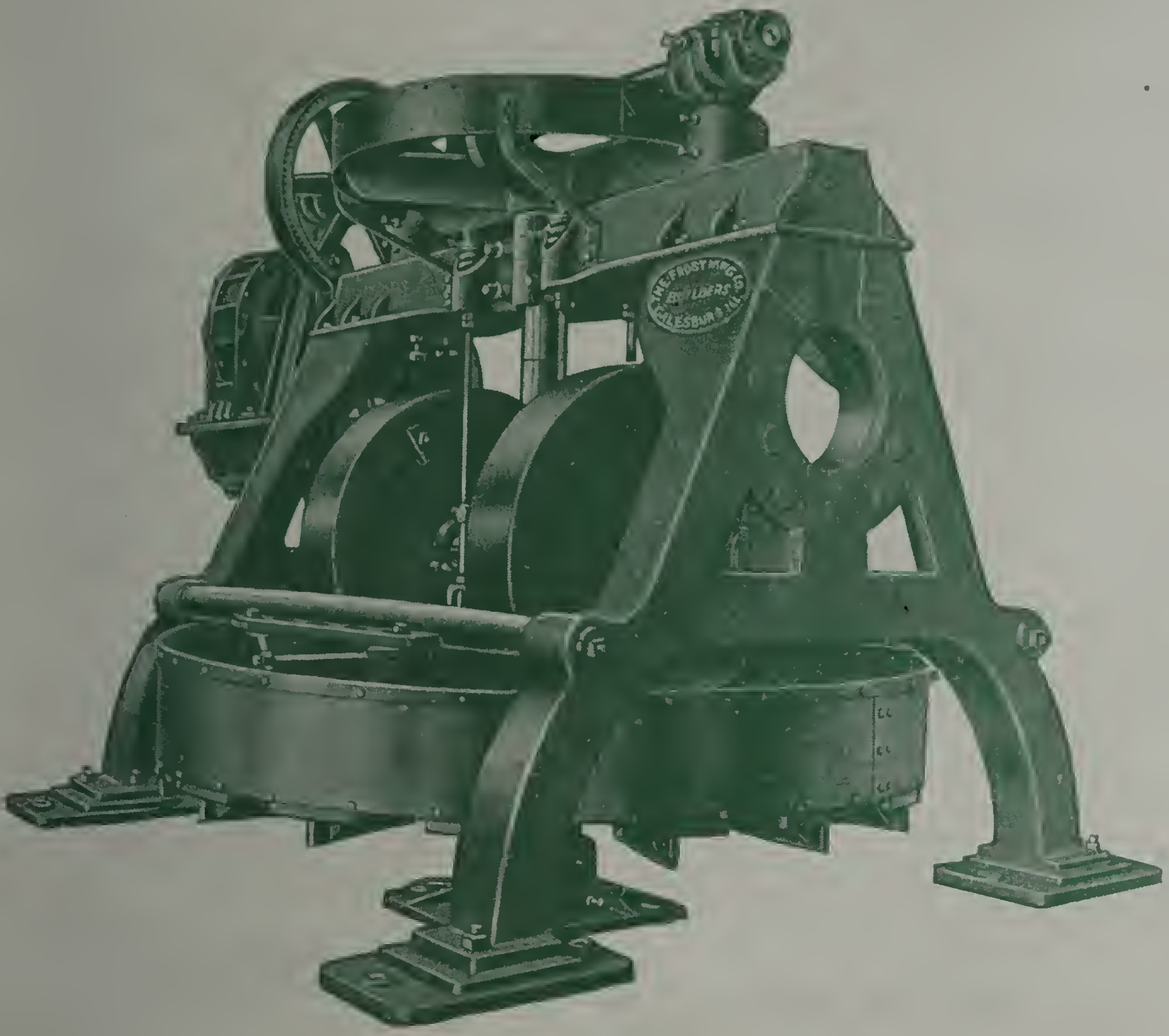
Galion, Ohio

DEPENDABLE MACHINERY OF PROVEN EFFICIENCY

Mention The Clay-Worker.

FOR SIXTY=FIVE YEARS

the name FROST has stood for all that is best in Power Plant Equipment, Clay Crushing and Mixing Machinery



We are particularly proud of the splendid services our products guarantee. And especially is this true of our 8 and 9 foot Dry Pans, which are built on honor and made to last.

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Dry Pans, Wet Pans, Sand Mills, Chaser Mills, Brick Rattlers, Automatic Side-Crank Engines, Automatic Center Crank Engines, Automatic Enclosed Engines for belt or direct connected service, Throttling Side and Center Crank Engines, Throttling Twin Engines, Horizontal Return Tubular Boilers, other various type boilers, Rocking and Dumping Grates, Open or Closed Feed Water Heaters, Pressure Tanks, Air Receivers, Stack and Plate work, Complete Power Equipment.

SEND FOR DESCRIPTIVE BULLETINS, ILLUSTRATING AND GIVING FULL DETAILS OF OUR PRODUCTS.

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THE MINTER SYSTEM

(PATENTED)

Of burning round down draft kilns is continuous on a loop, semi-continuous on a single line, or periodical on any kiln for special ware during any part of any burn.

One kind of ware can be burned in one kiln and another kind in the next succeeding. An oxidizing or carbonizing atmosphere can be produced in any kiln at any time and maintained or alternated as desired. Each kiln is subject to as close and individual control as if they were burned independently.

Investigate it from every angle, first cost, labor cost, full cost, production cost per 1000 capacity, flexibility and all the way you will find THE MINTER SYSTEM on the job ready to deliver the goods, and finally you will decide that it is

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It will use any fuel and burn your ware thoroughly and well.

Write Us For All Details

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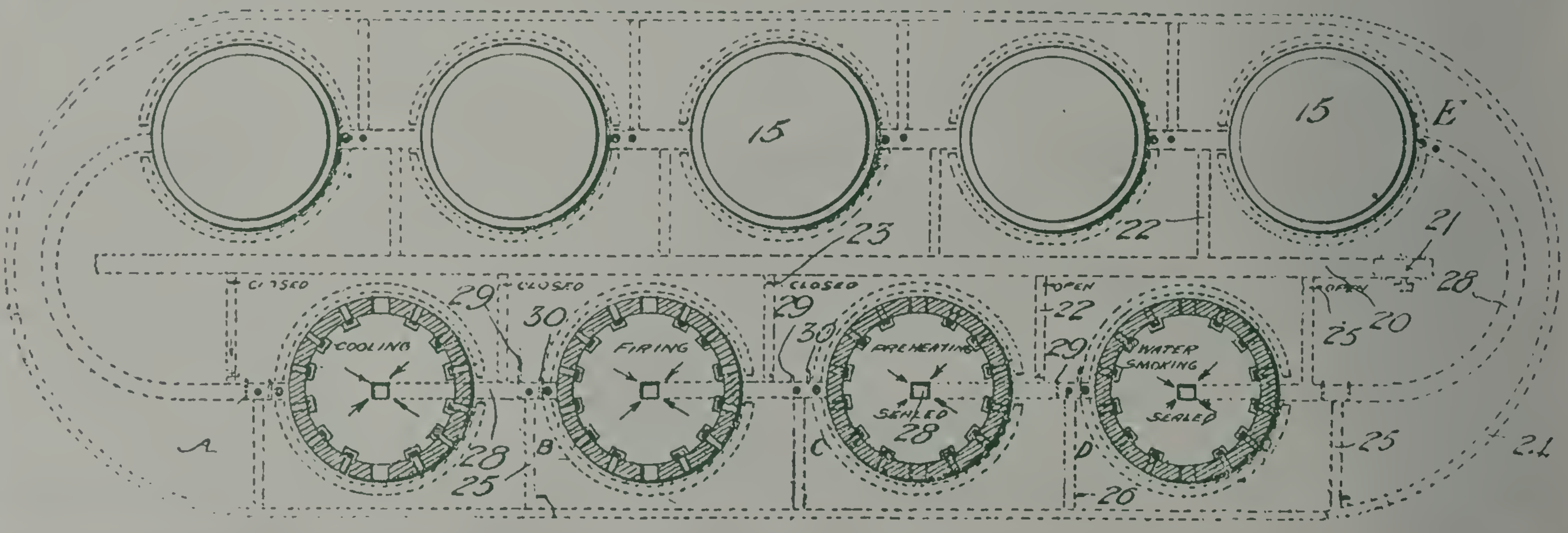

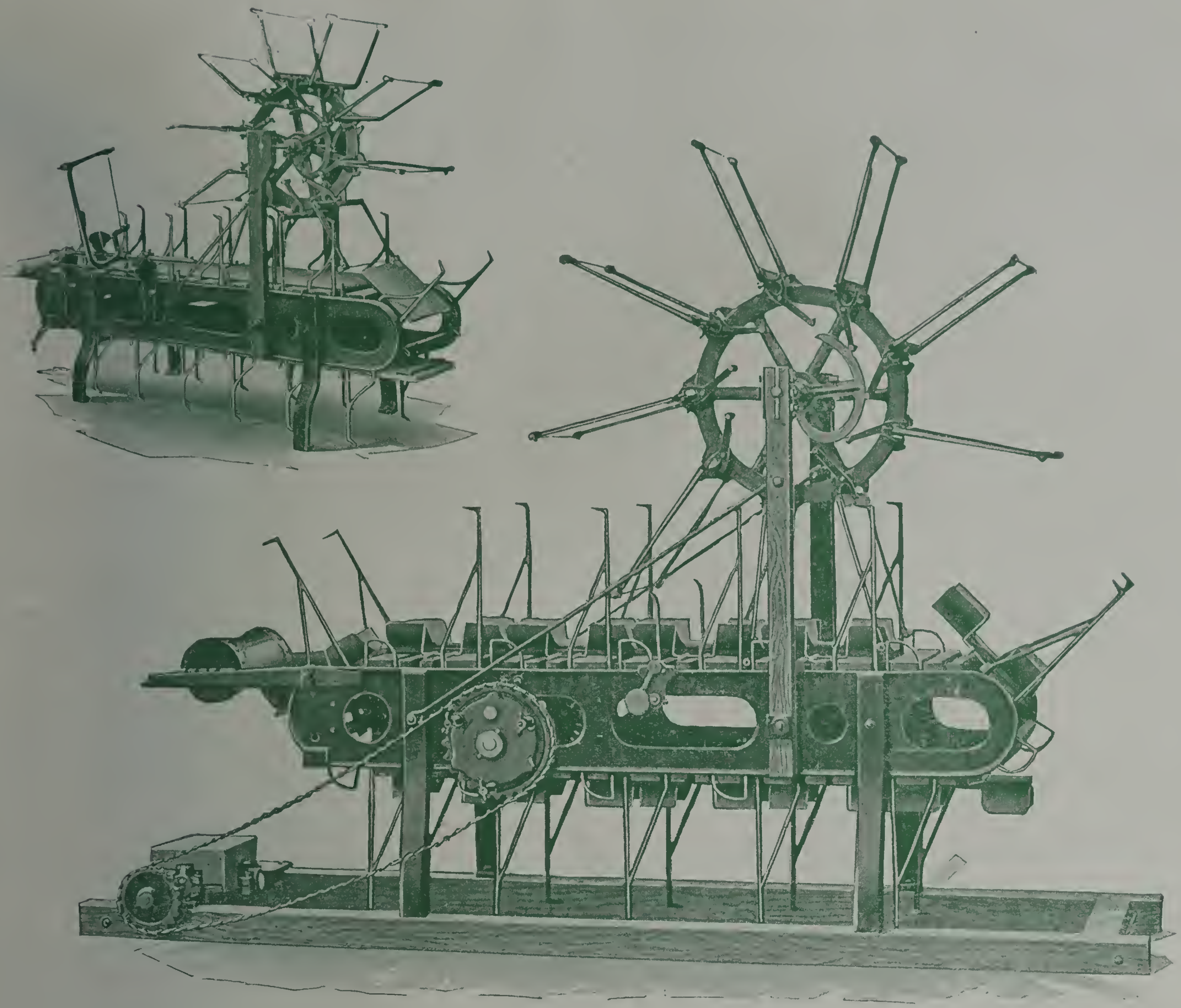

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This cutter will cut column of clay 10 inches high and 11½ inches wide. It may be built 2 inches wider than regular, in which case it will cut column of clay 13½ inches wide. The regular length cut is 13 inches, but the cutter may be built for any cuts from 10 to 18 inches.

The larger view shows the cutter with single stream, adjustable scoops for 3 to 8-inch drain tile, while the smaller view shows it with the flat platens for building tile, together with the hand cutting device for cutting the fractional lengths.

"Let us mail you Bulletin No. 4 which tells more about this cutter and describes several other good ones."

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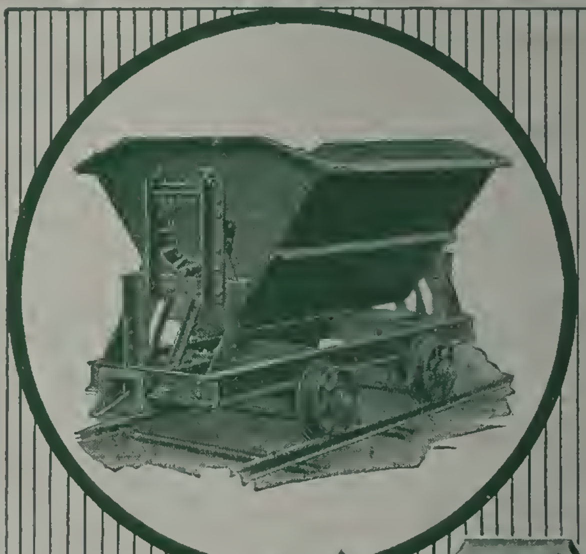

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